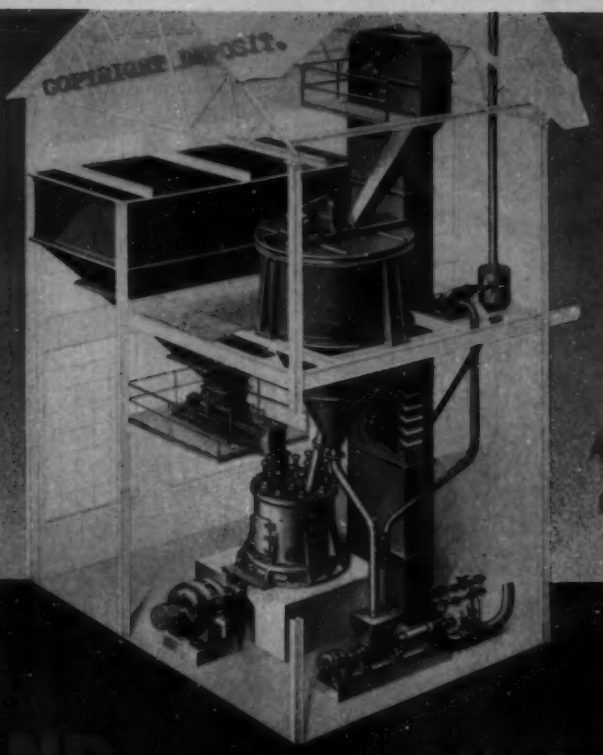
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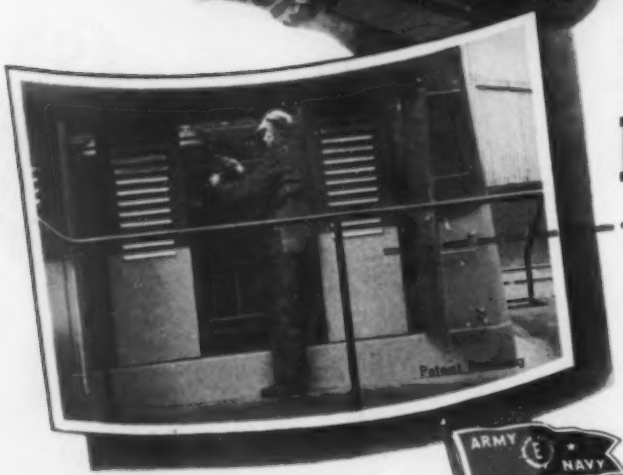
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Another Important Porter Development!

A brand new idea in hood construction and door arrangement provides easy access to engines through full double-door openings. The frameless hood is constructed entirely of formed sheets, thus eliminating angles and stanchions, and affording unobstructed access to power plants. Service men can work on one of the two independent power units while the locomotive is operating on the other, thus adding to its availability. Full description on request.

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PORTER "Better Built" Equipment
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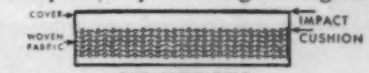
Ore-unloading cord belts by B. F. Goodrich outperformed former belts more than 100%

Double the tonnage carried for 25% increase in belt cost

THE average tonnage record for conveyor belts on these ore unloaders was 3,490,000 tons — until the first B. F. Goodrich cord conveyor belt was installed at the opening of the 1939 lake season. Because the cost of the B. F. Goodrich belt was 25% greater, the owner knew it would have to carry 4,300,000 tons to earn its premium price.

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The diagram shows why B. F. Goodrich cord belts outperform ordinary belts by such a great degree.



OLD TYPE BELT



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Note the cord plies made up of individual cords encased in rubber. In effect, they double the thickness of the impact cushion and because impact resistance varies as the *square* of the cushion thickness, resistance is increased *from 4 to 6 times.* Note the cord breaker running *across* the belt. That permits a spreading action that resists the cutting and gouging of heavy lumps striking the belt at the loading point. Belt life is greatly increased; ply separation practically eliminated.

B. F. Goodrich cord belts, now being made of synthetic rubber, can be used for all kinds of conveyor jobs. They are especially important for the really hard jobs that quickly ruin ordinary belts. If you have such a job in your conveyor system, ask the nearest B. F. Goodrich representative for complete information. Or write, *The B. F. Goodrich Co., Industrial Products Division, Akron, Ohio.*

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Save time and speed up contracts by mounting Load Luggers on your trucks and using several dump buckets for your material handling jobs . . . quarry operations, feeding crushers, stripping overburden, hauling to and from stockpiles.

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FOR MAXIMUM TRUCK EFFICIENCY:

Use 5 to 10 dump buckets with each LOAD LUGGER, depending on length of haul, number of men working and size of job.

Tilt-type, skip-type and special "bodies" (buckets) are available.

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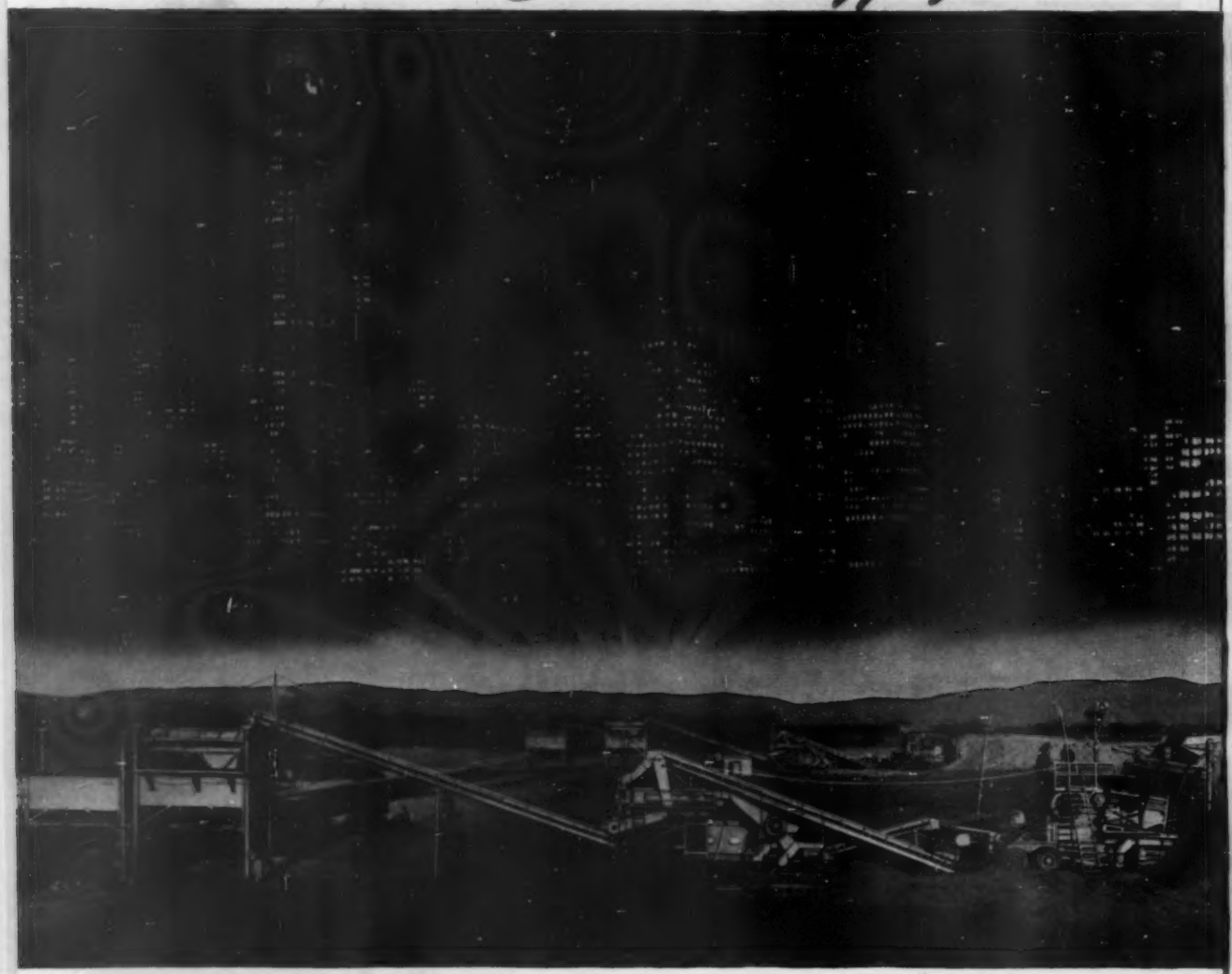
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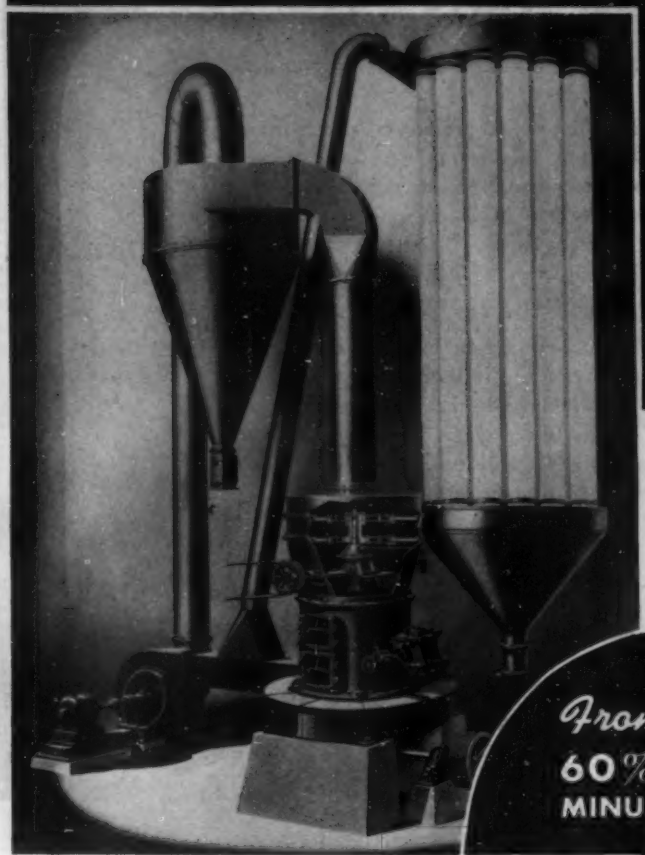
Led by Iowa, aggregate producing equipment has come a long way! The cost of building the skylines of the future, the highways of the future, the skyways of the future, is going to be a lot less for America's coming generations because of Iowa "Cedarapids" equipment.

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Swing to TIMKEN ROCK BITS

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The writer of the letter reproduced here might have set out to express the experience of all Timken Rock Bit users, so typical is it of the results obtained wherever Timken Bits have replaced forged steels. If you are not using Timken Bits, *now* is the time to stage a test under your particular operating conditions. We'll help. The Timken Roller Bearing Company, Canton 6, Ohio.

March 17, 1942

The Timken Roller Bearing Co.,
Canton, Ohio.

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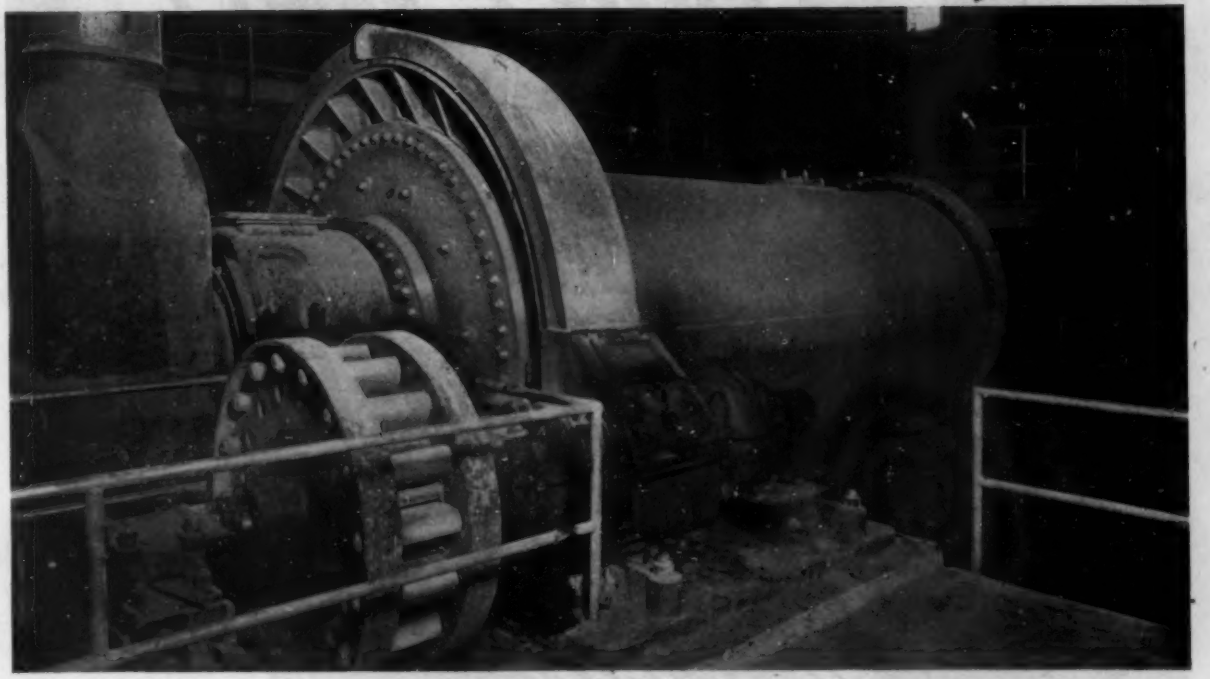
Yours very truly,

Taylor E. Huff

Taylor E. Huff
Chief Operations Eng.,
& Supt. Quarry Operations.
Fort Knox, Kentucky.



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THE SHELL OF THIS
TRAYLOR GRINDING MILL
IS IN ONE PIECE

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P. S.—The shells of Traylor Rotary Kilns, Coolers and Dryers are built like this, too!

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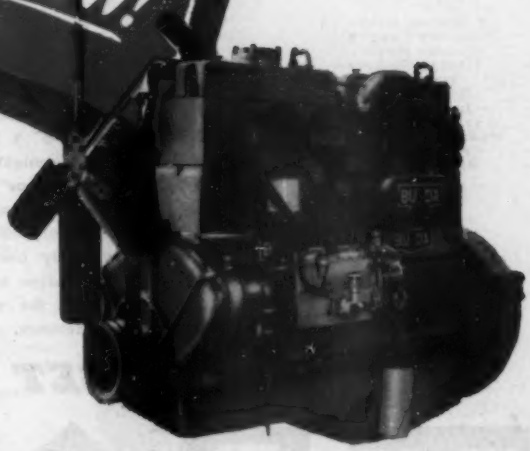


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. . . for costly breakdowns

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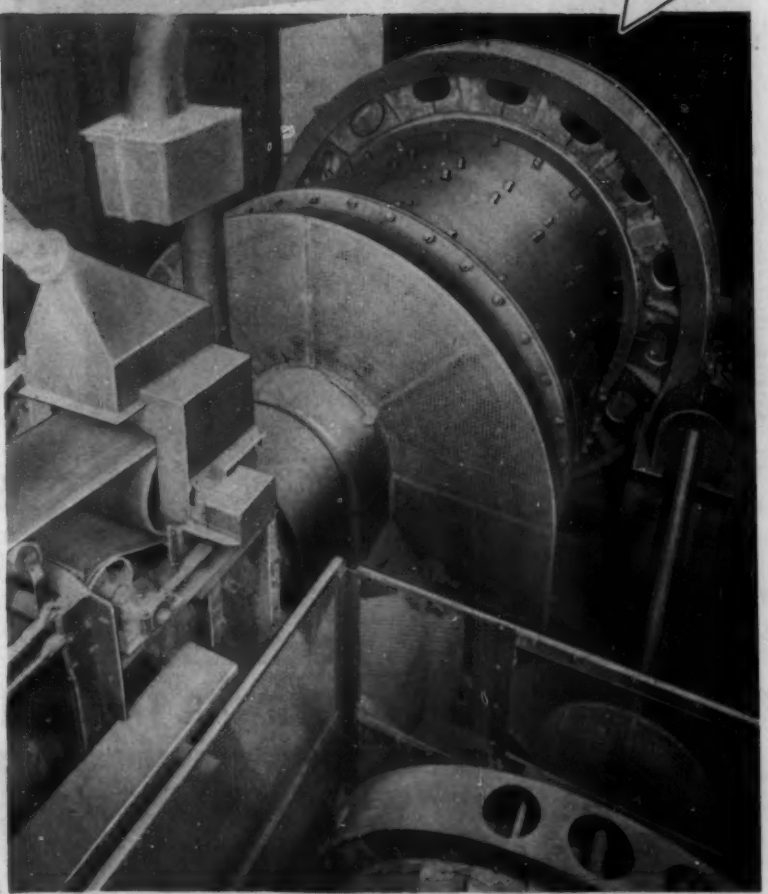
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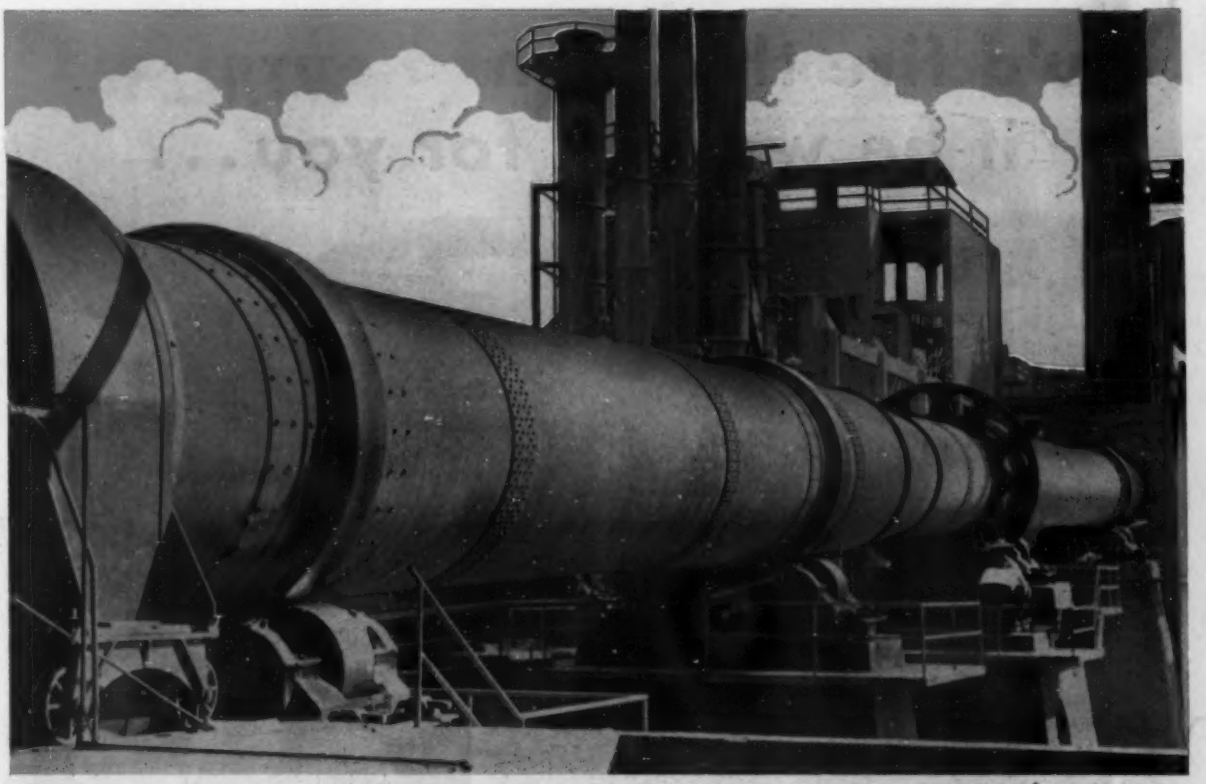


BELTS THAT SHED ELECTRICITY. One problem successfully solved by U. S. engineers was the development of conveyor belts of conductive rubber. First used in munitions plants, conductive rubber belts are now used in other industries where static sparks are a hazard.

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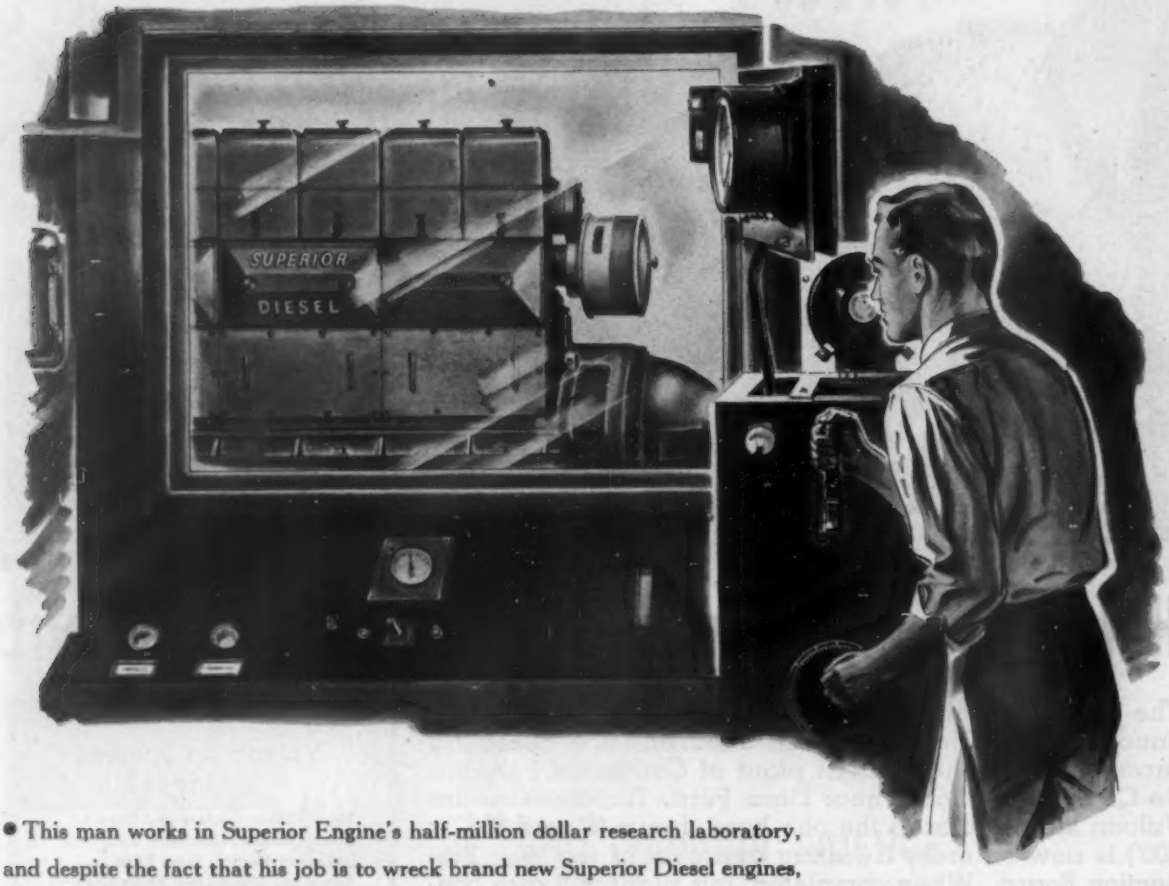


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MP-4





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12. Low, easily filled fuel tank.

13. Spring mounting and automotive steering if 210 cfm size or larger, 2-wheel trailer for all smaller sizes.

14. A fine, durable finish.

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Experienced Engineering . . .

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STEPHEN S-A DAMSON MFG. CO.

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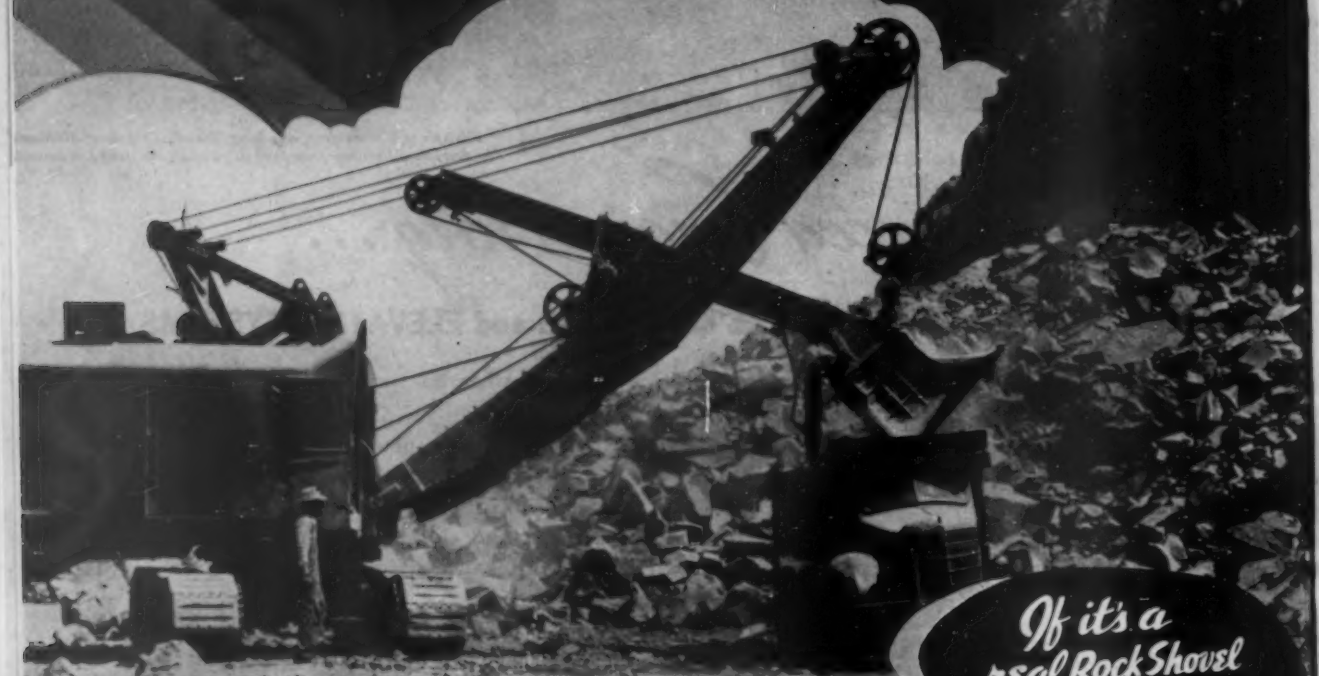
Designers and Manufacturers of All Types of

BULK MATERIAL HANDLING EQUIPMENT

Making ... WORK A BI...GER DAY ... Possible!

FATIGUE takes toll of production! When machinery is tiring to operate, the output curve slides downhill toward the end of the day. Northwest engineers recognized this a long time ago and built Northwest accordingly. One of Northwest's exclusive features is the "feather-touch" clutch control which utilizes the power of the engine to throw the heavy drum clutch making operation smoother and easier.

NORTHWEST ENGINEERING COMPANY
1806 Steger Building • 28 East Jackson Boulevard
CHICAGO 4, ILLINOIS



NORTHWEST

CONVERTIBLE FOR ANY MINING MATERIAL HANDLING OR EXCAVATION PROBLEM

If it's a real Rock Shovel you won't have to worry about output in dirt

NITRO STARCH GAIL

High Explosive Efficiency

IN MINING · QUARRYING · LOGGING AND CONSTRUCTION

Plus THREE ADVANTAGES FOR YOU!

WILL NOT PRODUCE HEADACHES from handling . . . reduces discomfort from breathing muck pile fumes. Better working conditions for you and your men!

WILL NOT FREEZE or leak at Arctic or Tropic temperatures. Maintained high efficiency . . . anywhere . . . anytime!

WITHSTANDS IMPACT in high-powered Rifle Bullet Test. Greater safety for workers!

From "Fortress Europe" to the lands of Nipponese domination, Trojan Products are helping in blasting a path of destruction . . . clearing the way for a quicker, final Victory. Vital in war, Trojan Products were intended for peace . . . were designed for the construction and development of better things for a finer way of life. May the intended use of Trojan Products be their only use . . . soon!

BUY MORE BONDS!

EXPLOSIVES 1905 TROJAN 1944 CHEMICALS

TROJAN POWDER COMPANY

ONE OF AMERICA'S OLDEST HIGH EXPLOSIVES MANUFACTURERS

PLANTS: SEIPLE, PA. • ROBERT, CAL. • MAGAZINES STRATEGICALLY LOCATED THROUGHOUT THE NATION

OFFICES: ALLENTOWN, PA. • SAN FRANCISCO, CAL. • LOS ANGELES, CAL. • PORTLAND, ORE. • NEW YORK, N. Y.



"Hard worker...this Buddy of mine"

When there's a road to be built, or a runway constructed through marshy jungles, important jobs are being done with good, stout Wickwire Rope. In fact, Wickwire Rope was a buddy to many of the men before the war when they were working in oil fields, mines, forests, shipyards and construction jobs.

Seeing that our fighting forces get the wire rope they need is part of our job. Of course, we realize (and they do too), that you also need wire rope to do your bit toward getting supplies to them. It helps speed the day of victory when you make each length you now have last longer.

Proper selection, application and usage of wire rope will make it last longer. If you have a particular wire rope problem we will be happy to be of service. Write Wickwire Spencer Steel Company, 500 Fifth Avenue, New York 18, N. Y.



WHAT ROPE IS BEST ON SMALL SHEAVES?

Our FREE book "Know Your Ropes" gives the answer to this and other wire rope questions. Its 82 pages contain 78 "right and wrong" illustrations, 40 wire rope life savers, 20 diagrams, tables, graphs and charts.

SEND FOR YOUR FREE COPY

Send your wire rope questions to:

WICKWIRE SPENCER STEEL COMPANY

500 FIFTH AVENUE, NEW YORK 18, N. Y.

WS STANDS FOR FRIENDLINESS

Abilene • Buffalo • Chattanooga • Chicago • Detroit • Houston • Los Angeles • Philadelphia • San Francisco • Tulsa • Worcester

NEW *Thor* RETAINER



. . . provides NEW OPERATING SPEED

Fully-enclosed to prevent clogging . . . to function smoothly for the life of the tool, the springs in this new Thor Retainer now give you longer, steady "cushioned" action on operations typical of the above — where the shock of removing the drill from a hole is absorbed.

WITH *Thor* ROCK DRILLS

Thor design scores again with an *exclusive* development to bring you *new operating speed* with Thor Rock Drills.

It is the new Thor "Spring Cushion" Steel Retainer which now *fully encloses* its springs to bring you these new *speed* advantages:

✔ Fully enclosed Thor springs *last longer . . . save you time and maintenance cost,* because they are protected from dirt and other particles to prevent clogging.

✔ Fully enclosed Thor springs *retain longer, steady "cushioning" action* because they are sealed at proper tension inside a steel cap that is part of an inherent retainer design preventing them from being overtightened by the operator or repairman.

✔ Fully enclosed Thor springs *help you work faster . . . longer* because this same principle of *steady tension* makes the spring-attached locking device easier to operate in removing the drill shank from the tool under operation.

For full information about these new, improved Thor Sinker Rock Drills write today for Catalog 42A.

Thor *Portable Pneumatic and Electric Tools*

INDEPENDENT PNEUMATIC TOOL COMPANY

600 W. JACKSON BOULEVARD, CHICAGO, ILL.

Branches in Principal Cities

NOBODY LIKES ROUGH RIDING



WHO likes rough riding on a construction job—nobody! The men can't do their best work with rough-riding rock drills—and contractors can't make satisfactory progress under such conditions.

Gardner-Denver Sinkers are *popular* drills because they are especially designed for easy riding and balanced performance. And because they permit more footage per shift, they're preferred by contractors, and quarry operators too!

Noted for their powerful four-pawl rotation—for their thorough hole cleaning—and for their low air consumption —Gardner-Denver Sinkers can increase output on your workings. For full information, write Gardner-Denver Company, Quincy, Illinois.



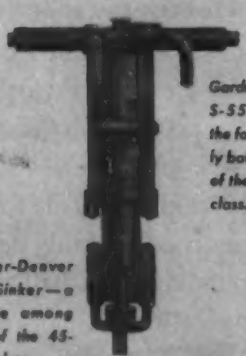
Gardner-Denver S-79 Sinker—an exceptionally powerful drill of the 80-pound class.



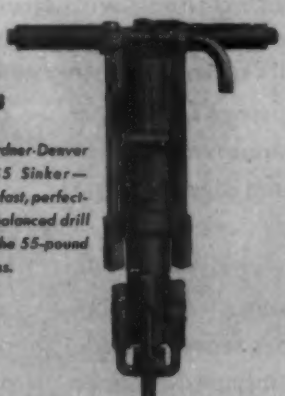
Gardner-Denver S-73 Sinker—67 pounds of speed and power.



Gardner-Denver S-33 Sinker—an outstanding performer for its weight class.



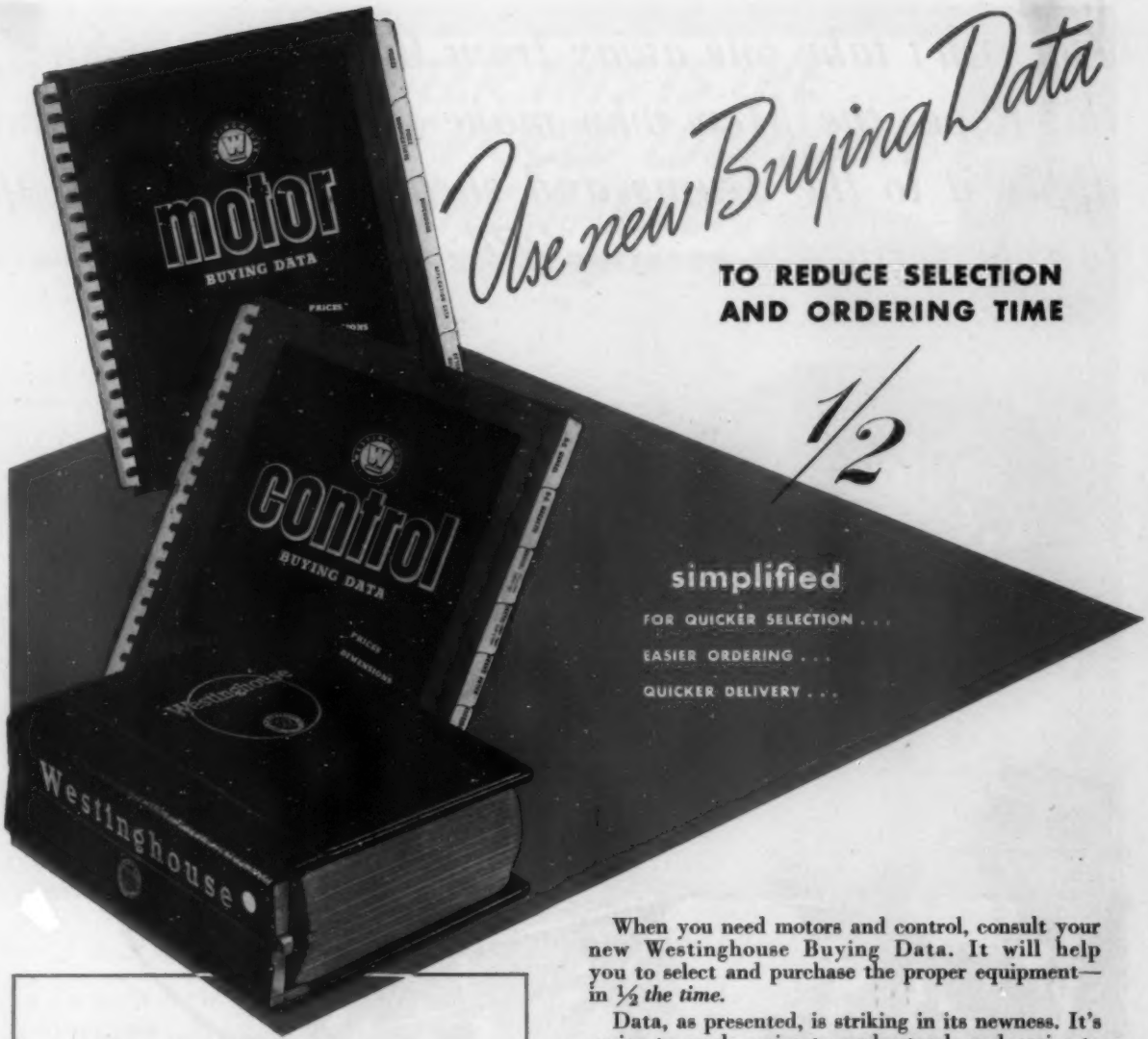
Gardner-Denver S-45 Sinker—a favorite among users of the 45-pound class.



Gardner-Denver S-55 Sinker—the fast, perfectly balanced drill of the 55-pound class.



GARDNER-DENVER *Since 1859*



When you need motors and control, consult your new Westinghouse Buying Data. It will help you to select and purchase the proper equipment—in ½ *the time.*

Data, as presented, is striking in its newness. It's easier to read, easier to understand, and easier to use than any offered previously by any manufacturer.

To fit widely varying requirements, this radically new Buying Data is available in two forms:

Motor and Control Loose-Leaf Book. This is for the use of large-scale purchasers and is "tailored" to meet the needs of the individual buyer. Pricing data is always kept up to date by the issuance of new price supplements.

Bound books are suitable for use of the majority of motor and control buyers. They contain prices (correct at time of issue and satisfactory for estimating purposes throughout the books' life), dimensions, application data and descriptions. Books include:

"Motor Buying Data" covering popular types and ratings of motors (up to 100 hp), Gearmotors and M-G sets.

"Control Buying Data" listing a wide variety of controllers and accessories for direct current, single-phase, squirrel-cage, wound rotor motors.

J-90499

HERE'S HOW TO GET THIS NEW BUYING DATA

If you are a buyer of Motors and Control, chances are you have already received this new data by mail.

However, if you have not received your copy, write, wire or phone your nearest Westinghouse district office (requests will be filled through district offices only—no mailings from Westinghouse Headquarters at East Pittsburgh). Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.

Westinghouse MOTORS AND CONTROL

PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE

You can't take one away from the other—the Steel, the Rope, the Men who make it, engineer it, and apply it to the drums and sheaves. They add up to rope service ● **ROEBLING** *"Blue Center"* **STEEL WIRE ROPE**



WHAT CAN YOU EXPECT from Roebling? Rope that has known capacity to deliver service. Engineering, in our plant and at your job, to put the rope to work right. Maintenance practices that protect its long life. » » Your postwar profits and postwar jobs will depend in part on operating rope-rigged equipment at lowest cost. You can leave that part to Roebling.

JOHN A. ROEBLING'S SONS COMPANY, Trenton 2, New Jersey
Branches and Warehouses in Principal Cities

ROEBLING

PACEMAKER IN WIRE PRODUCTS

WIRE ROPE AND STRAND • FITTINGS • AERIAL WIRE ROPE SYSTEMS • COLD ROLLED STRIP • HIGH AND LOW CARBON ACID AND BASIC OPEN HEARTH STEELS • ROUND AND SHAPED WIRE • ELECTRICAL WIRES AND CABLES • WIRE CLOTH AND NETTING AIRCORD, SWAGED TERMINALS AND ASSEMBLIES • SUSPENSION BRIDGES AND CABLES



"Now, I don't mean purchase price...LUBRIPLATE probably costs a lot more per pound than the grease you are now using... what I'm getting at is the over all costs.

"LUBRIPLATE lasts longer...yes, it does. You see the film is tougher...it stands up longer. A lot of fellows who use LUBRIPLATE tell me they have been able to stretch their lubrication schedules. This in itself is a saving.

"But the big thing is LUBRIPLATE arrests progressive wear and prevents rust and corrosion. Sure you save on parts replacement and machine shutdown...and as to lubrication...LUBRIPLATE is the slipperiest stuff you can put on a bearing. Of course it saves on power. All and all LUBRIPLATE is the most economical lubricant you can use."

• • •

Don't take our salesman's word for the economy and efficiency of LUBRIPLATE. Let us send the "LUBRIPLATE FILM" written especially for your industry. Read the case histories and unsolicited testimonials of other users. Write for a copy today.

℞ FOR YOUR MACHINERY

No. 2—Ideal for general oil type lubrication. Ring oiled bearings, wick feeds, sight feeds and bottle oilers.

No. 6—Because of its high film strength and long life reflects outstanding performance in most types of enclosed gears (speed reducers).

No. 187—One of the most popular grease type products for general application by pressure gun or cups.

No. 70—For a wide range of grease applications, especially at temperatures above 200 degrees F.

No. 130-AA—Known nationwide as the superior lubricant for open gears, heavy duty bearings, wire rope, etc.

BALL BEARING—This is the LUBRIPLATE lubricant that has achieved wide acclaim for use in the general run of ball and roller bearings operating at speeds to 5000 RPM and temperatures up to 300 degrees F.

LUBRIPLATE DIVISION
FISKE BROTHERS REFINING COMPANY
NEWARK, N. J. **SINCE 1870** TOLEDO, O.
WRITE FOR THE NAME OF THE DEALER NEAR YOU

Before the smoke of Battle clears away





They Used to Cut Grain by Hand

Then came the harvesting machine. One man and a reaper versus scores of men with scythes. Mevac metered vacuum power control of all operations in the Clipper's work relieves operators from pushing and pulling on operating levers all day long.

—Enter the Buckeye Clipper

A Buckeye Clipper convertible shovel is shown cleaning up debris in war-torn Naples, after a bombardment. Hundreds of these sturdy, easy-to-operate, Mevac-controlled ¾ yd. shovels are being used by the engineers; and their most recent jobs are right on the heels of the infantry, filling bomb craters, toppling standing walls of shell-gutted buildings, and loading trucks with debris.

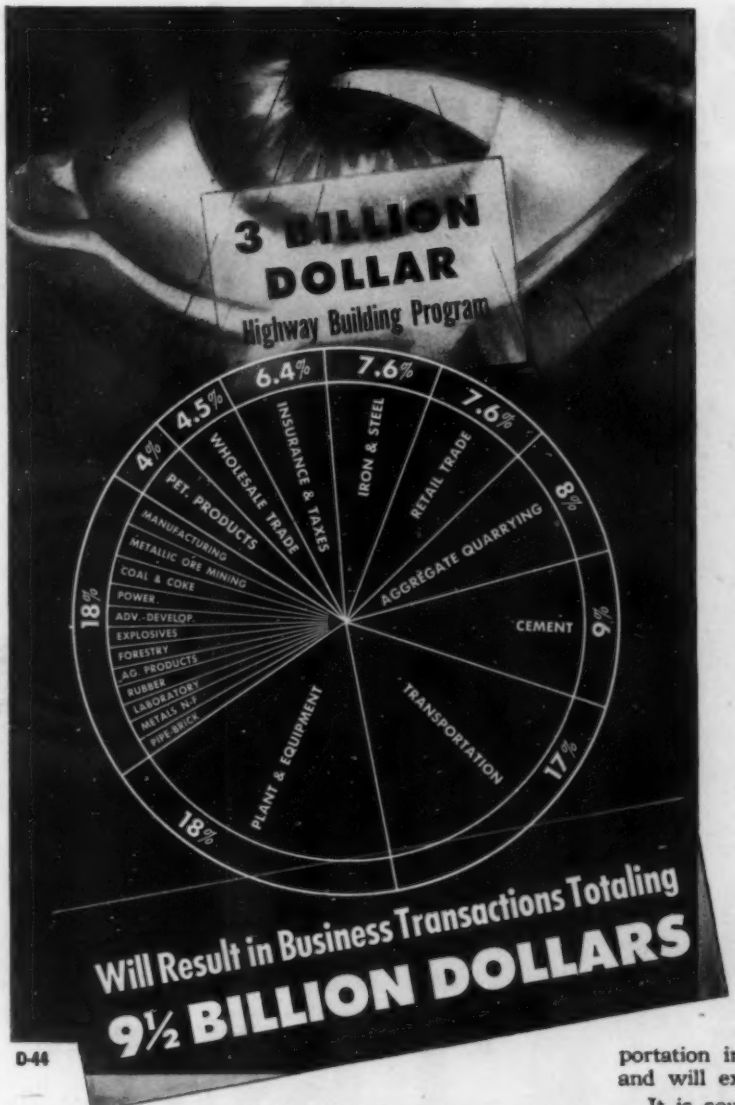
Buckeyes are mighty popular in the army because of their ease and simplicity of operation for vacuum power control transforms a rookie operator into a veteran "runner" almost overnight.

You can count on the same sterling performance after the war when ½ and ¾ yd. Clippers, no longer in olive drab, are available to you. Send for Bulletin 543 for complete details on Clipper convertible shovels.

Buckeye Traction Ditcher Co.
Findlay, Ohio

Built by Buckeye

Convertible Shovels Road Wideners Trenchers
Spreaders R-B Power Finegraders Tractor Equipment



D-44

$s × $s = Worthwhile Jobs

Giant Stride to Keep Free Enterprise FREE

PROPOSED BY AMERICAN ROAD BUILDERS' ASSOCIATION

Even those who would destroy the American system of free enterprise must credit it with the greatest war production record the world has ever known.

But, that is not enough to keep free enterprise free. No segment of industry can afford to relax when the pressure of war is off. Nothing short of full employment will make freedom of enterprise secure through many difficult post-war years.

Because it is a basic and a giant stride toward this "must" goal, we urge all industry to get behind and push forward the planned peacetime program of the American Road Builders' Association.

It is sound because its proposed 3 billion dollar annual investment in highways multiplies to eventually result in business transactions totaling 9½ billion. (See chart above based on studies by U. S. Public Roads Administration.)

It is sound because it is capable of directly employing 3 million persons quickly and of contributing indirectly to the supporting of many more million jobs. (The highway transportation industry alone normally employs 7,000,000 and will expand with highway construction.)

It is sound because the economic structure of the country is built around the motor vehicle and will become more dependent upon it. Gasoline rationing forcibly brought this fact home.

It is sound because our highway system is inadequate, has suffered from heavy war traffic, weathering and limited maintenance.

It is sound because registration fees, gasoline taxes, municipal and county taxes, Federal user taxes, personal property taxes and tolls, if all used for highway purposes, would eventually be sufficient to build and maintain the highway system.

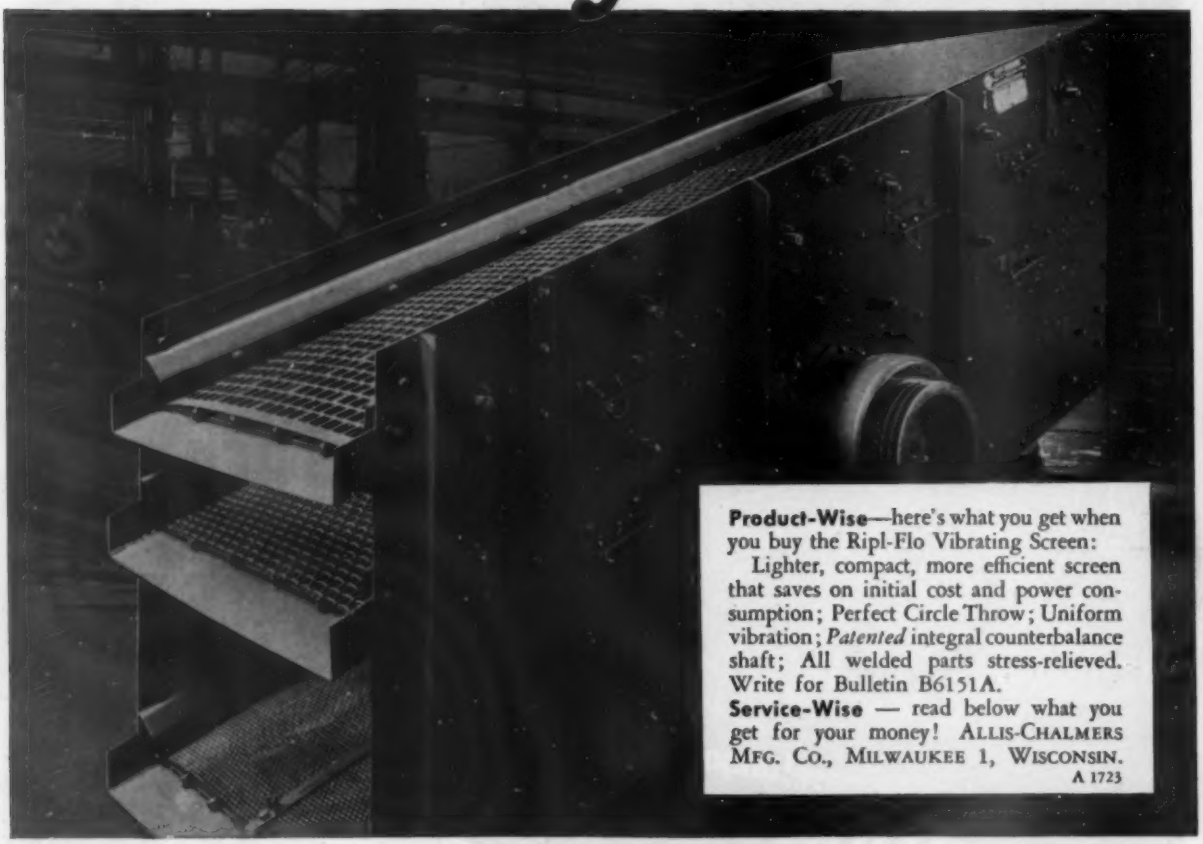
It is sound because it provides for competitive bids by contractors of experience. This insures higher efficiency, better construction at lower costs than can be obtained by the force account system of work relief.

The American Road Builders' Association, 1319 F St. N. W., Washington 4, D.C., has made a fourth printing of a 64-page book entitled "A Sound Plan for Postwar Roads and Jobs." We suggest that every American write for it—to the Association direct or to—

union Wire Rope corporation

Tulsa • Houston • Chicago • Salt Lake City • New Orleans 2156 Manchester Ave., KANSAS CITY, MO. Monahans, Tex. • Portland, Ore. • Ashland, Ky. • Atlanta

You Buy This . .



Product-Wise—here's what you get when you buy the Ripl-Flo Vibrating Screen:

Lighter, compact, more efficient screen that saves on initial cost and power consumption; Perfect Circle Throw; Uniform vibration; *Patented* integral counterbalance shaft; All welded parts stress-relieved. Write for Bulletin B6151A.

Service-Wise — read below what you get for your money! ALLIS-CHALMERS MFG. CO., MILWAUKEE 1, WISCONSIN.

A 1723

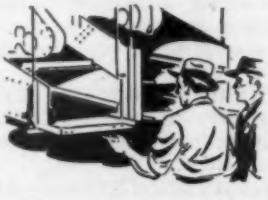
You Get This!



1 ENGINEERING COOPeration — Allis-Chalmers engineers work directly with your staff. Result: No guesswork when you specify A-C.



2 PRODUCTION ANALYsis—in which A-C looks for ways to make *existing* as well as new equipment "team up" for greater production.



3 UNBIASED RECOMmendation—building the world's largest line of basic processing goods, A-C supplies *exact* equipment you need.



4 PREFERRED REPAIR service—such orders are tagged "emergency", are expedited at A-C. In most cases we ship from stock.

ALLIS-CHALMERS

Basic Processing Equipment for Food, Chemical, Coal, Rock, Metal and Allied Industries

Former Taylor-Wharton Employee

SAVED BY "SPARKLET" BULB HE HELPED TO MAKE!



Read from his letter:

"When I went over the side I had one of the new Mae West vests on. I had never really looked at it but when we were picked up and I looked at it, you can imagine my surprise when I found Sparklets had blown it up. If they wouldn't have worked as well as they did, I would never have been here to write about it."



Shown at right are belts typical of that which saved the life of Milton Strawn, PhM2c, USN.



Had you asked Milton Strawn, 2 years ago, what he was doing in the Taylor-Wharton plant, he may well have said, "Oh, just making little cylinders for soda water".

Had you asked Milton on November 11, 1942, as he stumbled wet and weary to the deck of the rescue boat off North Africa, the answer would be fervently different. For he discovered that the Sparklet gas unit which inflated his "Mae West" contained the self-same cylinders made in his department at Taylor-Wharton Iron and Steel Company.

All of us at Taylor-Wharton share with The Sparklet Devices, Inc., Newark, N. J., the warm pride and thankfulness that comes from seeing so intimately the results of a job well done.

FOUNDED TW 1742

OTHER TISCO PRODUCTS:

MANGANESE STEEL CASTINGS
OTHER ALLOY AND CARBON STEEL CASTINGS
HIGH PRESSURE GAS CYLINDERS
ALNICO PERMANENT MAGNETS
MANGANESE-NICKEL WELD ROD
SPECIAL TRACKWORK • MISC. SEAMLESS TUBING

Taylor-Wharton Iron and Steel Co.

HIGH BRIDGE, NEW JERSEY • EASTON, PENNSYLVANIA



His Feeder Keeps Materials MOVING

THROUGH his many years of experience in the field of materials handling, Rex Conveying Engineering —Rex C. E.—knows that, to do its job, an apron feeder must deliver a steady flow of material . . . must stand up under heavy impacts . . . must resist the wear of grueling feeder service.

His apron feeders *are* sturdy. They're built to deliver maximum capacity, on continuous schedule, at lowest cost—with no down-time for maintenance or repair. Here, for example, in a large new cement mill, Rex C. E. built a heavy-duty feeder that feeds quarry-run rock from a receiving hopper to the primary crusher. The feeder is 60 inches wide by 18¾ foot centers. The apron slats are built of heavy steel plate, mounted on a rugged steel block link apron, and are carried on large steel idler rolls for maximum resistance to impact loads. The feeder delivers 500 tons per hour, at a speed of 20 feet per minute. Rock is kept moving . . . there's no wasted time or extra expense.

This is only one example of the many problems of feeder service by Rex C. E. and his staff of trained engineers. If you have a problem concerning the low cost handling of bulk materials, consult him. You'll find he can help you increase your plant efficiency and cut costs. Address Chain Belt Company, 1649 West Bruce Street, Milwaukee 4, Wisconsin.

REX CONVEYORS

CHAIN BELT COMPANY OF MILWAUKEE

Ground Crew

Next time you see a bomber overhead—stop and think for a minute of what it took to put it up there.

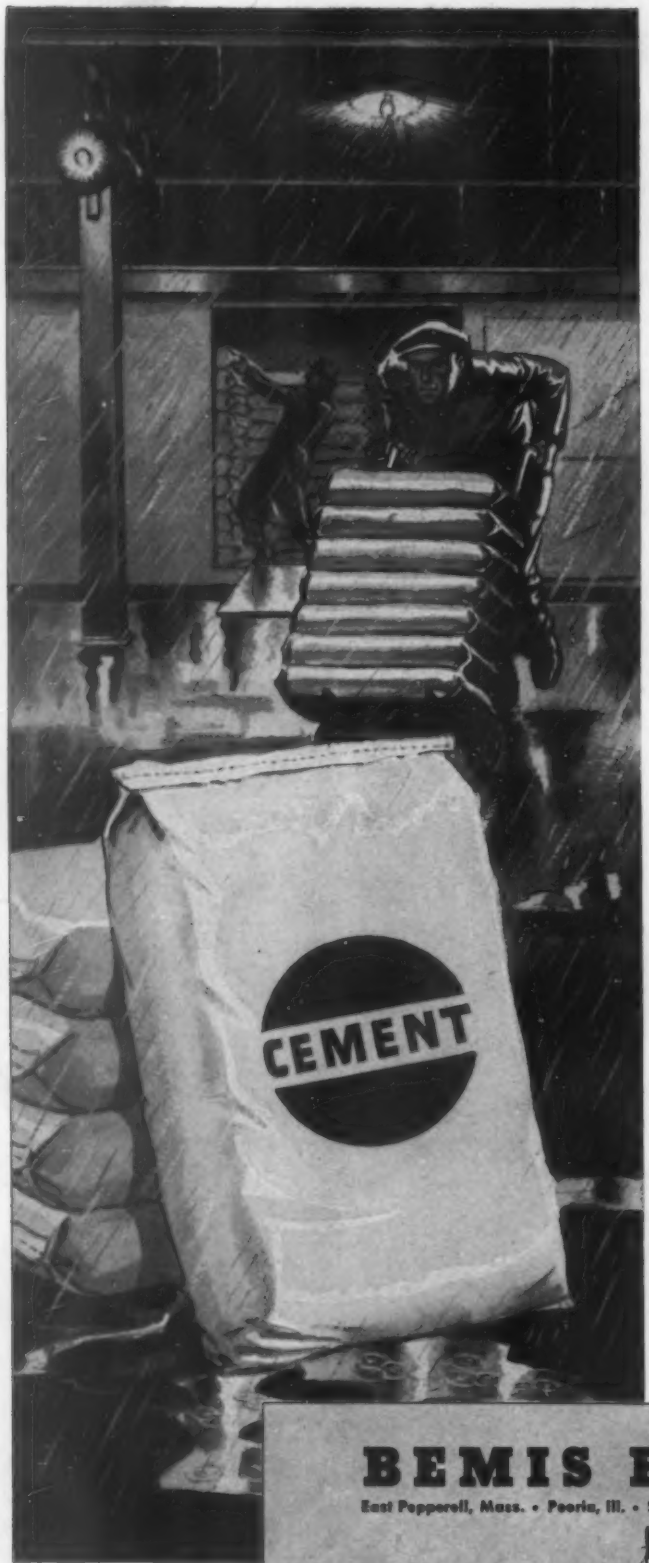
Think of the aluminum that sheathes its sleek lines . . . aluminum from a plant that was only a blueprint yesterday. Think of the propellers and the engines that drive it . . . propellers and engines from factories that were only corn fields the summer before. And think of the men who fly it and fight it . . . men schooled at air fields and training stations which were created virtually overnight.

All of these facilities and more were required to put that bomber up there . . . and all of them were provided by a vast ground crew that numbers its men and machines in the millions—America's Construction Industry.

Here, again, is a job that called for the best in every man and every piece of equipment . . . a job that required power of proven stamina, economy and dependability . . . a job that demanded nothing less than *Cummins Diesel Power*. CUMMINS ENGINE COMPANY, Columbus, Indiana.

This is the sixth and last in a series of advertisements depicting the war-time role of Cummins Diesel Power in the nation's basic industries. In the construction field, Cummins Dependable Diesels are used to power all types of heavy-duty dirt moving and material handling machinery—trucks, shovels, draglines, tractors, compressors and many other kinds of equipment. The giant 60-yard Tournapull illustrated here is powered by a pair of 200 hp. (Supercharged) Cummins Diesels.





TRY THIS!

and prove to yourself that BEMIS MULTIWALL PAPER BAGS are showerproof

TAKE a Bemis Multiwall Paper Bag, filled with your cement, and set it out in the weather. Let it rain . . . let it pour! (If the air is filled with sunshine around your plant, use a hose to simulate rain.)

After you're convinced that the bag has been in more weather than it ever will have to stand in ordinary use, let it set 'til it's dry. Then open it, and see how freely the cement pours out!

Protection against sudden showers is only *one* advantage of using Bemis Multiwall Paper Bags to package your cement. You'll find that these containers are economical . . . that they have strength to reduce lost time due to breakage on the production line . . . that they have ruggedness to protect your product in transit and on the job.

We'd like to have you know about the qualities of Bemis Multiwall Paper Bags before you place another bag order. So, we suggest you try this experiment soon. We'll send sample bags for the trial, if you'll ask for them. No charge and no obligation, of course.

BEMIS BRO. BAG CO.

East Pepperell, Mass. • Peoria, Ill. • San Francisco, Calif. • Wilmington, Calif. • St. Helens, Ore.

OFFICES: Baltimore • Boston • Brooklyn • Buffalo • Charlotte • Chicago • Denver • Detroit • Houston • Indianapolis • Kansas City • Los Angeles • Louisville • Memphis • Minneapolis • New Orleans • Norfolk • New York City • Oklahoma City • Omaha • St. Louis • Selma • Salt Lake City • Seattle • Wichita

HOW ABOUT *Availability* OF CLEVELAND ROCK DRILLS?





Of course, you are well acquainted with the excellent performance and durability of Cleveland Rock Drills. Our purpose here is to inform you of the prompt delivery we can make on this equipment.

MODEL H111—Leader in the 55-pound class for soft, medium, or hard rock. With AA-1 priority, shipment will be made within a week of receipt of order.



MODEL H10—The favorite in the 45-pound class. Despite the popularity of this drill, we are still in position to accept orders carrying AA-1 priority.

MODEL H66—The light drill with the big wallop. With AA-1 priority, we can ship reasonable numbers of this good machine within a week of receipt of order.

Rock drill users, that's the situation on Cleveland hand-held drills. On spare parts we make *immediate* shipment. Be assured that your requirements will always have our best attention.

BRANCH OFFICES

Birmingham, Ala.	Detroit, Mich.	Pittsburgh, Pa.
Boston, Mass.	El Paso, Texas	Richmond, Va.
Buffalo, N. Y.	Ironwood, Mich.	Salt Lake City, Utah
Butte, Mont.	Lexington, Ky.	San Francisco, Calif.
Chicago, Ill.	Los Angeles, Calif.	St. Louis, Mo.
Cincinnati, Ohio	Milwaukee, Wis.	Wallace, Idaho
Dallas, Texas	New York, N. Y.	Washington, D. C.
Denver, Colo.	Philadelphia, Pa.	

CANADIAN DISTRIBUTORS

Purves E. Ritchie & Son, Ltd., 658 Hornby Street, Vancouver, B. C.

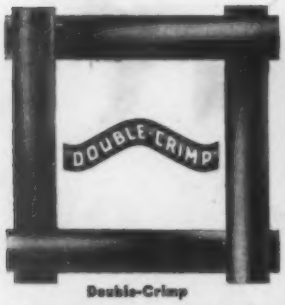
BUY U. S. WAR BONDS AND STAMPS

The CLEVELAND ROCK DRILL CO.

Division of The Cleveland Pneumatic Tool Company

CABLE ADDRESS: "ROCKDRILL" • CLEVELAND 5, OHIO

LEADERS IN DRILLING EQUIPMENT



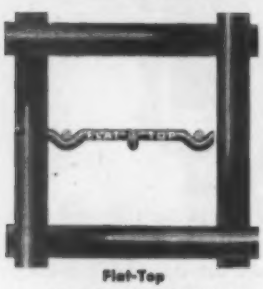
Double-Crimp



Arch-Crimp



Intermediate-Crimp



Flat-Top

"The Perfect"

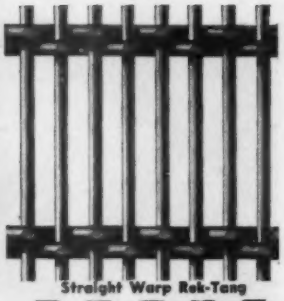
Wire Cloths and Screens

OF

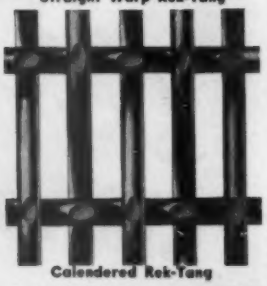
SUPER-LOY STEEL

GALVANIZED STEEL
STAINLESS STEEL
NICKEL-CHROME STEEL
PHOSPHOR BRONZE
BRASS
COPPER
MONEL
NICKEL
ALUMINUM

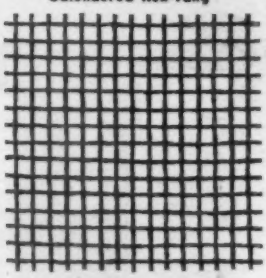
ANY SPECIAL METAL FOR ANY SERVICE



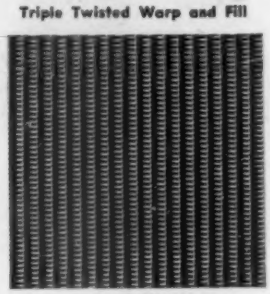
Straight Warp Rek-Tang



Calendered Rek-Tang



Triple Twisted Warp and Fill



Dutch Weave

"Perfect" WEAVES

Arch-Crimp
Coiled
Double-Crimp
Double-Fill
Dutch
Flat-Top
Intermediate-Crimp
Rek-Tang
Selvage-Edge
Straight-Warp
Stranded
Sta-Tru
Triple-Warp
Twilled
Twisted-Fill
Twisted-Warp

"Perfect" PROCESSING

Arc-Welding
Bending
Binding
Brazing
Calendering
Coiling
Crimping
Cutting
Dipping
Dishing
Finishing
Flanging
Flattening
Forming
Framing
Galvanizing
Jointing
Knuckling
Painting
Rolling
Selvaging
Shaping
Shearing
Slitting
Soldering
Spot-Welding
Squaring
Stitching
Tack Welding
Trimming

"Perfect" PRODUCTS

Baskets
Circles
Coils
Cones
Cylinders
Discs
Forms
Leaves
Lengths
Panels
Pieces
Ribbons
Rings
Rolls
Sections
Segments
Strips
Templates

Illustrations show items listed in bold-face type. Other wire cloths and screens will be illustrated in subsequent advertisements of this series.

Coil-Screen

THE LUDLOW-SAYLOR WIRE CO.

ST. LOUIS 10, MISSOURI

Cut Maintenance Costs and INCREASE PRODUCTION

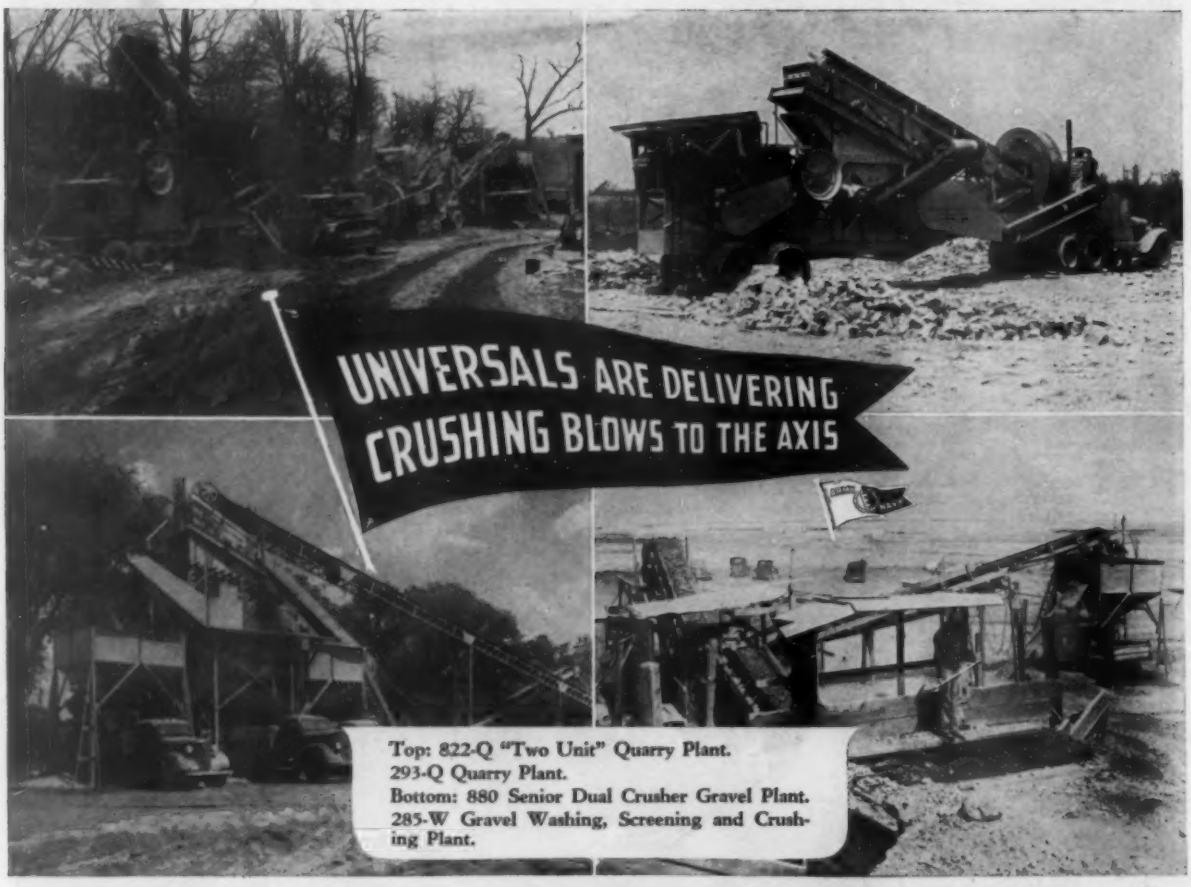


● Here in one convenient book are charts, suggestions and part by part information that will enable even a new operator to keep Euclid hauling equipment operating efficiently for peak production. This 72-page handbook is profusely illustrated and presents detailed information on the proper servicing and operation of Euclids for longer life and better performance.

Today when present equipment must be kept in good working condition despite possible delay or difficulty in obtaining repair parts, you will find this new book especially helpful in making every operator a *better* operator. If you haven't received copies for your organization, ask your Euclid distributor to supply you or write our Service Department.

The EUCLID ROAD MACHINERY Co. · · · Cleveland 17, Ohio

EUCLID SELF-POWERED HAULING EQUIPMENT For EARTH ROCK COAL ORE

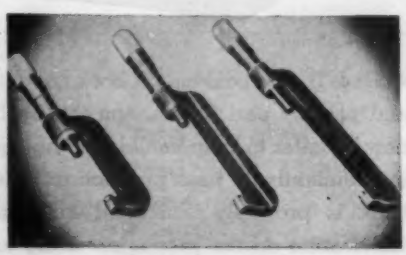


Top: 822-Q "Two Unit" Quarry Plant.
293-Q Quarry Plant.
Bottom: 880 Senior Dual Crusher Gravel Plant.
285-W Gravel Washing, Screening and Crushing Plant.

CRUSHED rock and gravel—in tremendous volume—is essential ammunition in the present war. Roads must be built in days instead of months, and concrete structures must literally spring from the ground. The speed with which this work is done is a typical case of American-built equipment giving important advantages over the enemy.

On every front, Universal crushing plants and rock and gravel crushers have speeded up the work. On the Alaska Highway, on South Pacific islands and elsewhere, they have established production records and functioned faithfully with minimum maintenance, so important in emergency construction. On the home front, Universal crushing equipment has done its share in the rapid building of access roads, runways and other military installations.

Universal is also producing pulverisers for fertilizer and explosives plants, and we are making a direct contribution to the war effort in the production of army ordnance equipment which we have been called upon to build. At right are gages made in our toolroom for use in producing precision parts in our shops.



UNIVERSAL ENGINEERING CORP.

617 C Avenue W., Cedar Rapids, Iowa

UNIVERSAL

CRUSHERS, PULVERIZERS, COMPLETE PLANTS, SPREADEROLLERS, PORTABLE ASPHALT PLANTS



Maybe you'll feel the same way about Taylor Spiral savings—

JUST glance at the piping services listed below. These are the services that most pipe users would call the ordinary, every-day kind. Therefore the pipe they select for such uses is the ordinary, every-day kind of pipe—the time-honored Standard Thickness kind.

Of course Standard Thickness pipe will handle such requirements, but it has one big, basic fault. It is a lot heavier than most jobs of this kind require. Since it is heavier, it costs more to buy, more to install, more to support. And today it has the added fault of wasting vital steel.

How do you know this to be true? Simply because it has been repeatedly proved that Taylor Spiral Pipe, weighing about half as much as Standard Thickness Pipe, can handle any of these moderate and low pressure applications with strength and service life to spare. Yes, and often at an installed cost of half that of the heavy pipe it replaces!

This is simply because Taylor Spiral is so strong for its weight. The spiral seam, running from end to end, does the trick—makes it the strongest type of pipe on earth, size for size and gauge for gauge.

Changing to Taylor Spiral Pipe for services like those listed is made easy by the complete range of sizes and fittings. Thicknesses range from 18 to 6 gauge; sizes from 4" to 42"; joint lengths up to 40 ft. All types of end joints and couplings, all kinds of fittings and specials or fabricated assemblies, are produced by Taylor Forge, assuring a complete service and undivided responsibility.

TAYLOR FORGE & PIPE WORKS

General Offices & Works: Chicago. P. O. Box 485 ★ New York Office: 50 Church St. ★ Philadelphia Office: Broad Street Station Bldg.



Uniform MOISTURE

In Washed Sand for Concrete

CUTS TIME & COST

in mixing



Control the moisture with

AKINS *Classifiers*

WHEN you talk business to large users of sand for concrete there's a tremendous sales advantage in being able to say that you can supply sand of uniform moisture content — and make it stick. Every contractor knows that moisture content of sand either causes variation in tests or adds time and cost in mixing — or both.

AKINS Classifiers, long identified with the dressing of practically all metallic ores, are finding increasing favor in sand washing because they are mechanically adapted to CONTROL OF MOISTURE. AKINS Classifiers are also particularly suited to washing sands specified to close separation, as for glass making.

AKINS Classifiers do not require unloading to start after shutdown. This is particularly advantageous for sand plants not operating 24 hours a day. Considering their high tonnage output, power requirements are absurdly low.

In writing for further information, please state your washing problem.

We also manufacture:

SKINNER MULTIPLE HEARTH ROASTERS; LOWDEN DRYERS; BALL, ROD & TUBE MILLS; SMELTING EQUIPMENT; CRUSHERS & ROLLS; DIAPHRAGM PUMPS.

COLORADO IRON WORKS *Company*

Canadian Locomotive Co., Ltd., Kingston, Ont., Can.
Vancouver Iron Works, Ltd., Vancouver, B. C., Can.
Head, Wrightson & Co., Ltd., Stockton on Tees, England
Head, Wrightson & Co., (So. Africa) Ltd. Johannesburg
The Clyde Engineering Co., Ltd., Granville, N. S. W.

MAIN OFFICE & WORKS: DENVER 2, COLO., U. S. A.

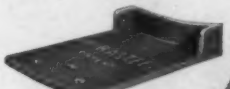
Specify These Alloys for Super-Service

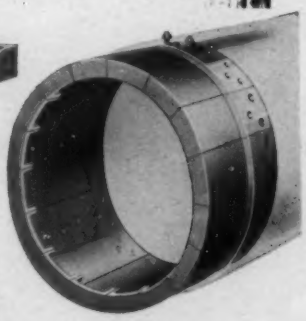
PYRASTEEL for high temperatures

EVANSTEEL for hard service

PYRASTEEL KILN ENDS

PYRASTEEL Kiln Ends are used by a majority of cement producers to reduce heat losses and improve kiln operation. They render tight sealing possible and result in substantial fuel savings. Segmental construction . . . easy to install . . . extremely durable.





Unit segments are easy to install or replace.

CEMENT FEED PIPE

PYRASTEEL Feed Pipes, either straight or curved, not only have great resistance to heat and oxidation but also high resistance to abrasion. Once installed, they last for years.



DRAG CHAIN



Many industries, particularly cement, using rotary kilns, find that PYRASTEEL drag chains, even when they work entirely immersed in molten clinker, will stand the hardest kind of service. They do not warp, break or oxidize.

CLINKER COOLER →

For clinker cooler work, PYRASTEEL has never yet failed in any application up to 2000° Fahr. PYRASTEEL is used on all makes and for any method of cooling.





PULVERIZER HAMMERS

During recent years, hammer mill manufacturers have been searching for a better material for pulverizer hammers. EVANSTEEL has proved to be the answer to utmost requirements.



PUG MILL KNIVES

EVANSTEEL heat-treated Pug Mill Knives show unusual resistance to wear, yet are not brittle. They do not break in service like some materials, but wear down evenly to the stub.

CONVEYOR BUCKETS



For use with hot or cold clinker, EVANSTEEL Conveyor Buckets do not cost more than fabricated buckets, but their wearability is a matter of years instead of months.

SCREEN PLATES

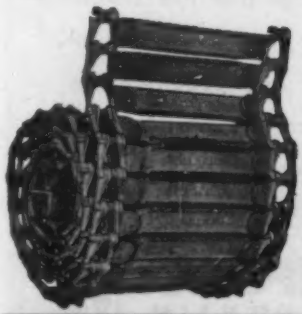


EVANSTEEL heat treated Screen Plates are accurately made. They fit into position without machining, and will last indefinitely.

WIRE ROPE SOCKETS



EVANSTEEL Wire Rope Sockets have been used for 30 years without the record of a single failure. They have proved to be the strongest type of sockets on the market.



CONVEYOR BELT

PYRASTEEL Conveyor Belts are furnished in a full range of styles and sizes for every purpose. Strongly and accurately made for high temperature applications.

Write for Bulletin No. 14 H.B. It gives technical data on economical applications of PYRASTEEL.



CHICAGO STEEL FOUNDRY COMPANY

Makers of Alloy Steel for Thirty Years

Kedzie Avenue at 37th Street — CHICAGO 32, ILLINOIS

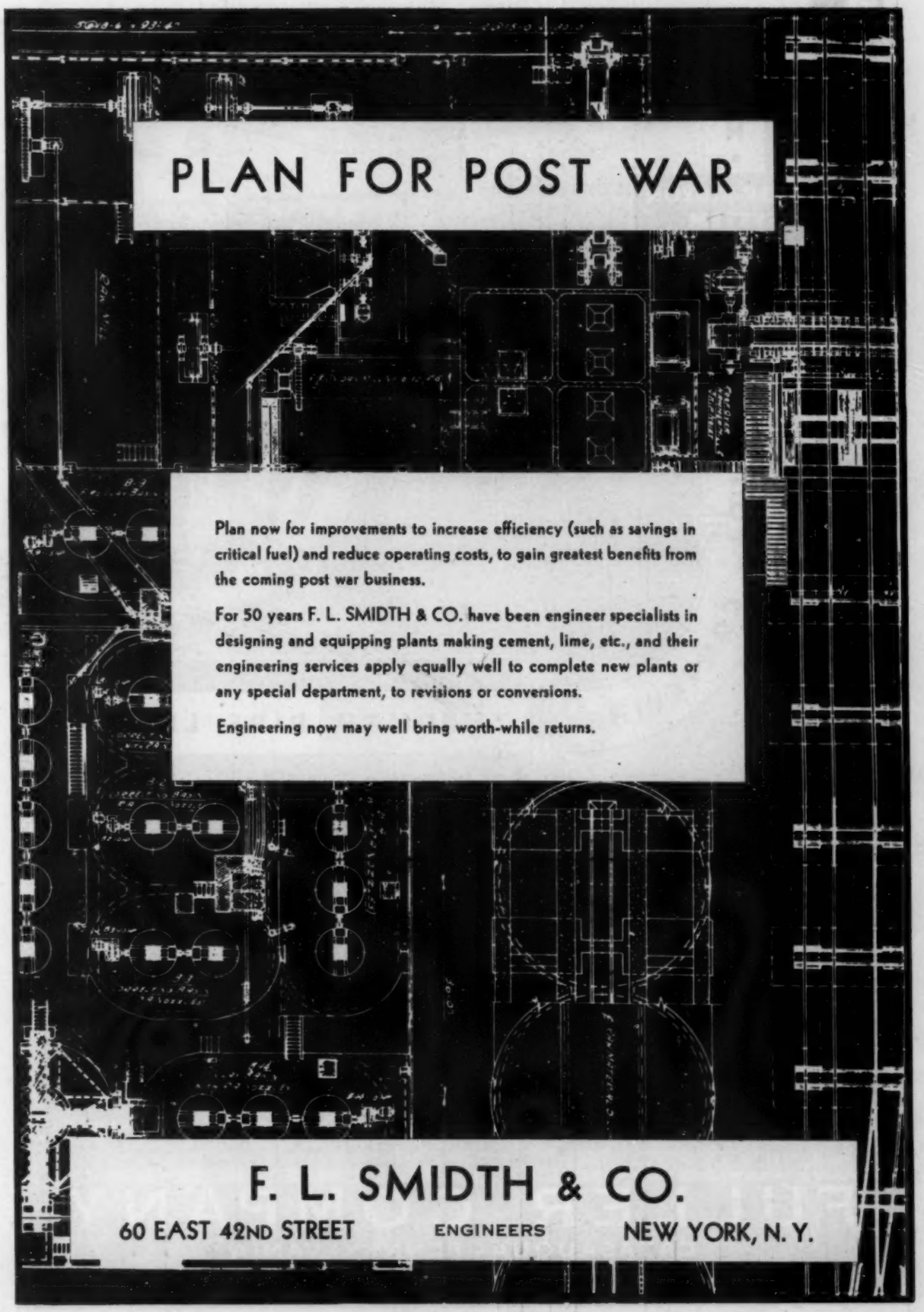


Do That Fine Crushing WITH SHORT HEAD CONES..

For crushing to the finer sizes, whether ore, stone, gravel or slag, no crusher can match the performance of the Symons Short Head Cone for tonnage and low crushing cost. Now is the time to make plans to meet postwar demands. If your requirements call for fine crushing, here is the crusher that will do the job for you just as it is doing for most large producers of fine materials.

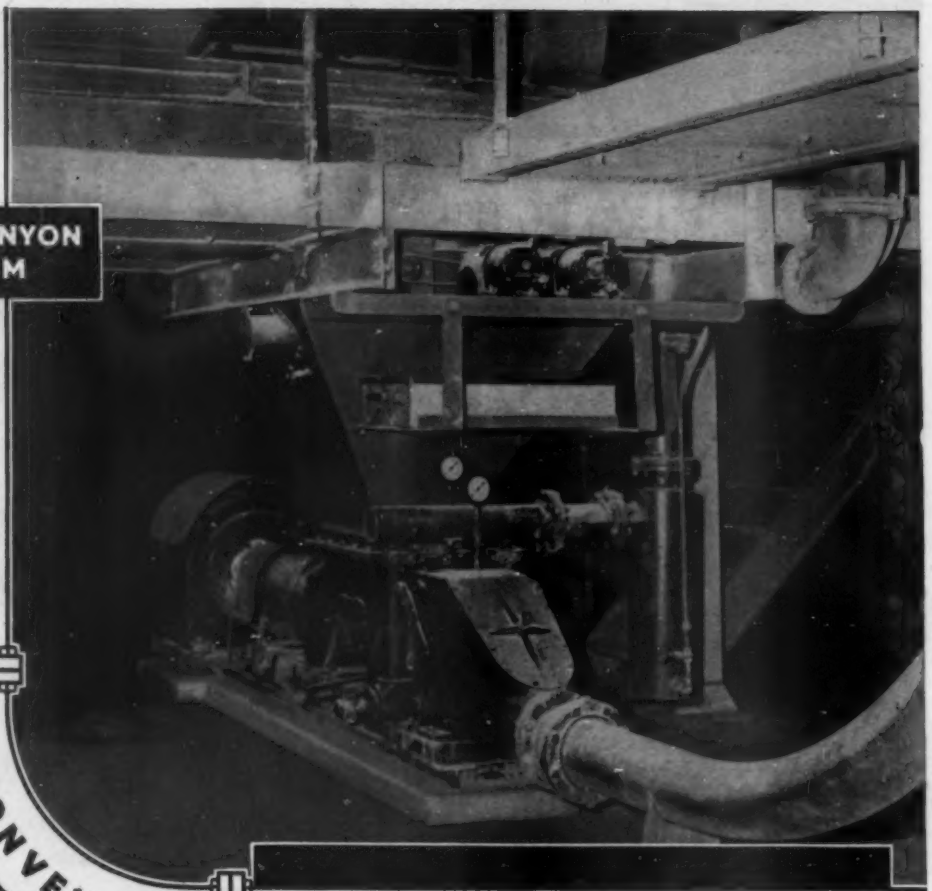
NORDBERG MFG. CO.
MILWAUKEE 7, WISCONSIN
NEW YORK · LOS ANGELES · LONDON · TORONTO

SYMONS CONE CRUSHERS


PLAN FOR POST WAR
Plan now for improvements to increase efficiency (such as savings in critical fuel) and reduce operating costs, to gain greatest benefits from the coming post war business.
For 50 years F. L. SMIDTH & CO. have been engineer specialists in designing and equipping plants making cement, lime, etc., and their engineering services apply equally well to complete new plants or any special department, to revisions or conversions.
Engineering now may well bring worth-while returns.
F. L. SMIDTH & CO.
60 EAST 42ND STREET
ENGINEERS
NEW YORK, N. Y.

CLEAN • SAFE • LOW COST CONVEYING

FULLER-KINYON SYSTEM



THROUGH PIPE LINES

SOME MATERIALS CONVEYED BY FULLER-KINYON SYSTEMS

Arsenic dust
Asphalt filler dust
Bag fume
Baroid
Barytes
Catalyst
Cement (Portland)
Cement raw materials
Clays (dried)
Colox
Copper converter dust
Dextrine
Dolomite
Fuller's earth
Gypsum (raw)
Lime (quick)
Magnesite
Manganese Dioxide
Ore (pulverized)
Rock dust
Siliceous Powder
Starch (Pearl)
Starch (Powdered)

The Fuller-Kinyon System is an outstanding example of simplicity of design, having many inherent advantages for the conveying of dry pulverized materials, some of which are:

CLEANLINESS—Materials conveyed through standard-size pipe lines, underground or overhead. No dust collectors necessary.

SAFETY—Explosion proof . . . air for conveying insufficient to support combustion. No mechanical or dust hazards.

LOW-OPERATING COST—No links, buckets or drags requiring frequent attention, replacement and repairs. Only one moving part . . . the screw in the pump, which can be replaced with a minimum loss of time.

ELIMINATES STRAIGHT-LINE CONVEYING—Cuts corners to shorten conveying distances . . . anywhere a pipe line can be placed: horizontally, vertically, up or down hill.

Put your conveying problems up to us . . . we're here to help and suggest equipment best suited to your needs.

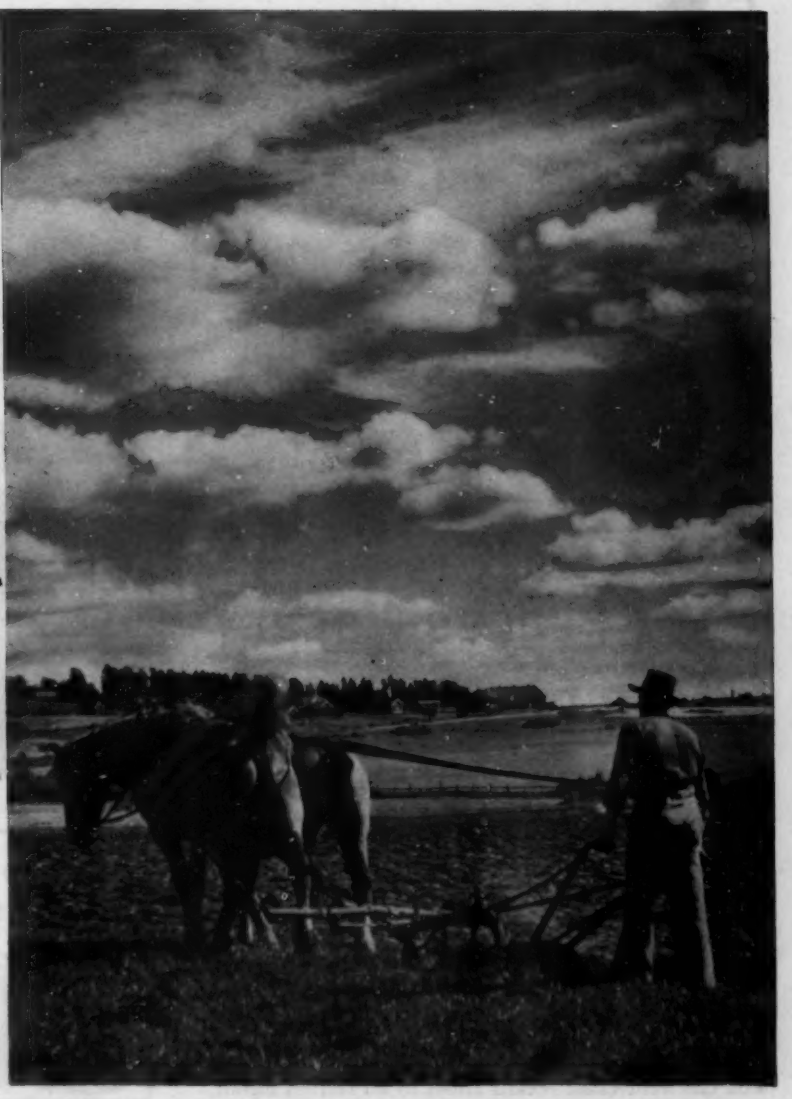
P-6

FULLER COMPANY

CATASAUQUA—PENNSYLVANIA

CHICAGO, 3 Marquette Bldg.
WASHINGTON, 5, D. C. Colorado Bldg.
SAN FRANCISCO, 4 Chancery Bldg.

Delivering the Goods FOR VICTORY!



The seed he plants, and the fertilizer he uses, are packaged in Multiwalls. The foodstuffs he grows are also safely delivered to Burma, to Brooklyn, and to Bryansk, in Multiwalls.

Multiwall Paper Bags are required for industrial shipments of food products, chemicals, fertilizers, and construction materials — for domestic use and overseas to our armed forces and civilian populations of allied nations and occupied countries.

St. Regis MULTIWALL PAPER BAGS

MULTIPLY PROTECTION • MULTIPLY SALEABILITY

ST. REGIS PAPER COMPANY

TAGGART CORPORATION • THE VALVE BAG COMPANY

NEW YORK 17: 230 Park Ave. CHICAGO 1: 230 No. Michigan Ave.

BALTIMORE 2: 1140 Baltimore Trust Bldg. SAN FRANCISCO 4: 1 Montgomery St.

IN CANADA:
BATES VALVE BAG CO., LTD.
Montreal, Quebec
Vancouver, British Columbia

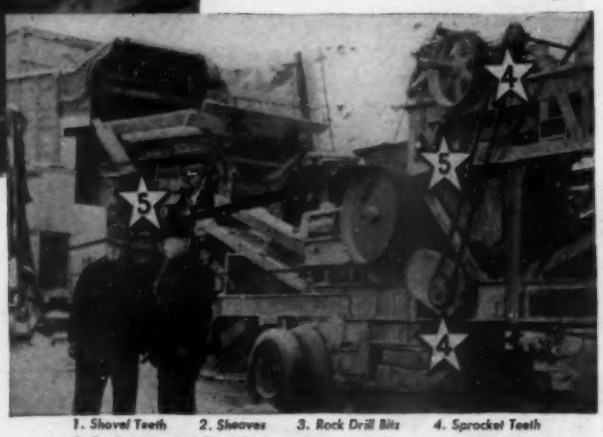
Boston, Mass. Birmingham, Ala. Dallas, Texas Denver, Colo.
No. Kansas City, Mo. Los Angeles, Calif. New Orleans, La.
Franklin, Va. Seattle, Wash. Nazareth, Pa. Toledo, Ohio



WHERE YOU SHOULD USE HARD-FACING

Here, in this informative six-page pamphlet, you will find scores of applications where Coast Metals Hard-Facing makes possible longer equipment life, fewer shutdowns, less idle labor, metal conservation, salvage of worn parts, and peak equipment output! Write for your free copy today!





1. Shovel Teeth 2. Sheaves 3. Rock Drill Bits 4. Sprocket Teeth
5. Crusher Jaws and Cheek Plates 6. Tractor Treads and Rollers

6 PLACES WHERE HARD-FACING WILL $AVE YOU MONEY!

SEE THOSE SHOVEL TEETH, sheaves, rock drill bits, sprocket teeth, crusher jaws, tractor treads and rollers? All are typical equipment parts that can be made extra-resistant to wear by Coast Metals Hard-Facing.

All that is necessary is to weld the Coast Metals overlay or coating to the steel or iron surface to be protected. Use either the electric arc or the gas torch process. Application is easy, and conforms to simple welding techniques. You can weld Coast Metals alloys to all ferrous metals, including manganese steel, alloy steel, cast iron and chilled iron.

Coast Metals Hard-Facing eliminates the need for frequent repairs or replacements also of pump shell liners, hammers, plows, shafts, bulldozers, extruding screws, pump runners, cement pump screws, paddle washers, rolls, dredge pump or other parts. Our new pamphlet, "How to Make Your Equipment Last Longer" goes into full detail. Write for your free copy today.

COAST METALS, INC.
Plant and General Offices: 1232 Camden Ave., S.W.
Canton 6, Ohio
Executive Offices: 2 West 45th Street, New York 19, N.Y.

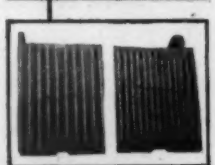
Does Your Equipment Give Outstanding Performance LIKE THIS?



Spouts Last 30 Days Where 10 Days Had Been Tops. These Coast Metals hard-faced pulverizing mill discharge spouts resist the severe abrasive action of hot clinker mixture that formerly wore out ordinary spouts in less than 10 days!



Trowel Shows Small Surface Wear After Shaping 30,000 Feet of Concrete Pipe. Shaping the bell-end of machine made concrete pipe, this hard-faced revolving trowel withstands gruelling abrasion of crushed stone, sharp sand, and cement aggregate, giving over 30 times previous best service.



Crushes 4,900 Tons Where 1,800 Tons Had Been The Limit. Instead of being thrown away, these crusher jaws, when seriously worn, now are hard-faced with wear-resistant Coast Metals. The result is they today crush 4,900 tons of material where formerly, with uncoated standard manganese jaws, 1,800 tons had been the limit.

COAST METALS HARD-FACING WELD RODS

MAKE YOUR EQUIPMENT LAST LONGER

TYPICAL DIESEL LUBRICATION PROBLEMS:

1. Port Clogging

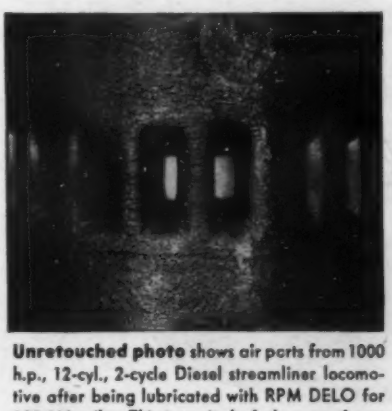
The plugging of intake and exhaust ports is frequently a factor in the operation of two-cycle Diesel engines.

Port clogging results from the combination of fuel soot with the residues of oxidized lubricating oil, which acts as a binder to plug the port openings. This clogging, of course, results in a sharp drop in efficiency.

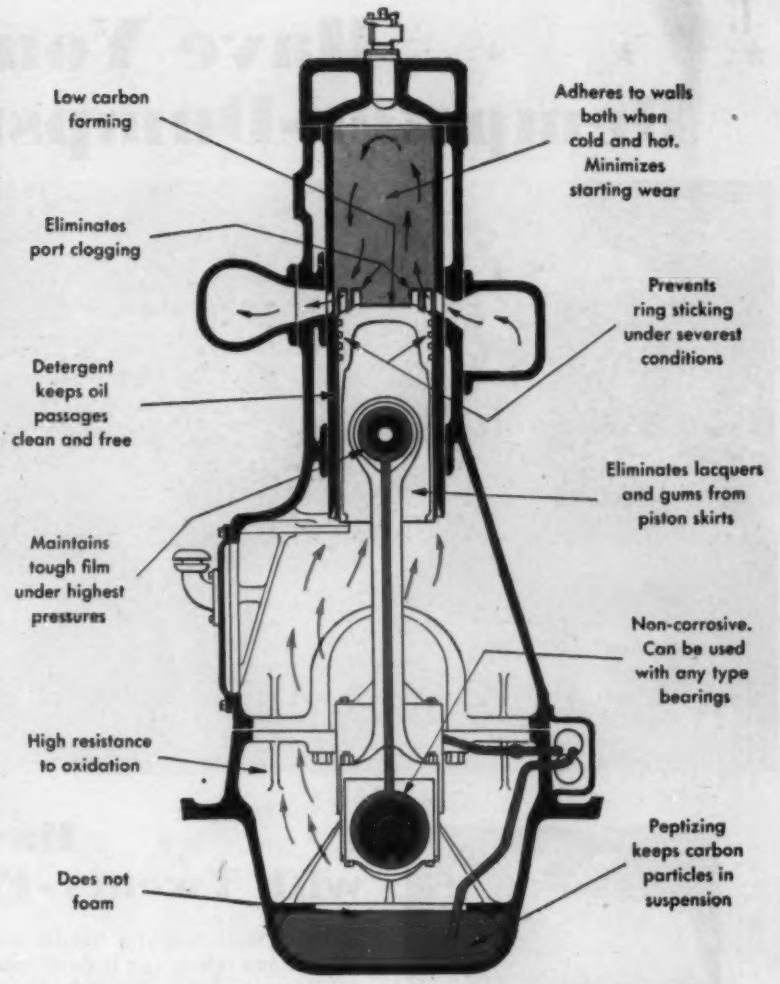
In simplified form, the deterioration of lubricating oil in an engine involves a combination of oxygen and oil at high temperatures. As the oil continues to absorb more and more oxygen, acids called "oxyacids" are produced. These oxyacids tend to polymerize or form very large, oil insoluble molecules. These form the binder for the deposits on intake and exhaust ports.

The problem, then, of eliminating these deposits may be solved by the use of a lubricating oil properly compounded to prevent it becoming a binder. RPM DELO accomplishes this in four separate ways.

1. RPM DELO is manufactured from a carefully selected base oil containing natural inhibitors highly resistant to oxygen. It contains no heavy residues which may be left behind to act as a binder for the fuel soot.



Unretouched photo shows air ports from 1000 h.p., 12-cyl., 2-cycle Diesel streamliner locomotive after being lubricated with RPM DELO for 127,590 miles. This is typical of absence of port clogging experienced when RPM DELO is used.



Diagrammatic sketch of 2-cycle Diesel, showing the typical location of intake and exhaust ports and the advantages obtained from the use of RPM DELO.

2. RPM DELO contains a powerful oxidation inhibitor, which greatly reduces the rate at which the oil absorbs oxygen.

3. RPM DELO has chemical detergent properties. The compounding material reacts with the oxyacids to render them essentially inert so that they are no longer able to polymerize to form gums and lacquers.

4. RPM DELO has peptizing properties which enable it to maintain soot and oxidation products in suspension in minute particles. This prevents these materials from settling from the oil and forming engine deposits.

The elimination of port clogging, is, of course, only one of the valuable properties of RPM DELO. It also minimizes ring and cylinder wear, eliminates ring sticking, prevents excessive deposits on rings and will not corrode bearings.

RPM DELO has world-wide distribution and is marketed under the following names: RPM DELO, Caltex RPM DELO, Kyso RPM DELO, Signal RPM DELO, Sohio RPM DELO, and Imperial-RPM DELO (concentrate).

RPM DELO

STANDARD OF CALIFORNIA

★ ★ ★ Have You Seen The Dempster-Dumpster Work?





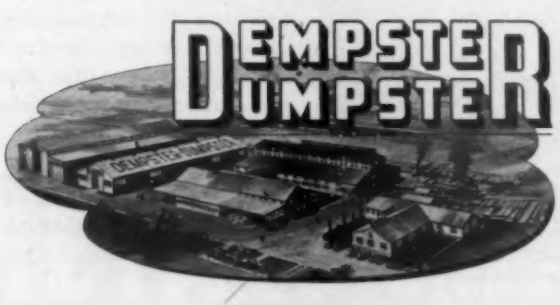
★ ★ ★ Have You a Truck with Twenty-Five Bodies?

If the materials you handle within your plant are rock, gravel, sand or any other, you'll do it faster and at tremendous savings with the Dempster-Dumpster system!

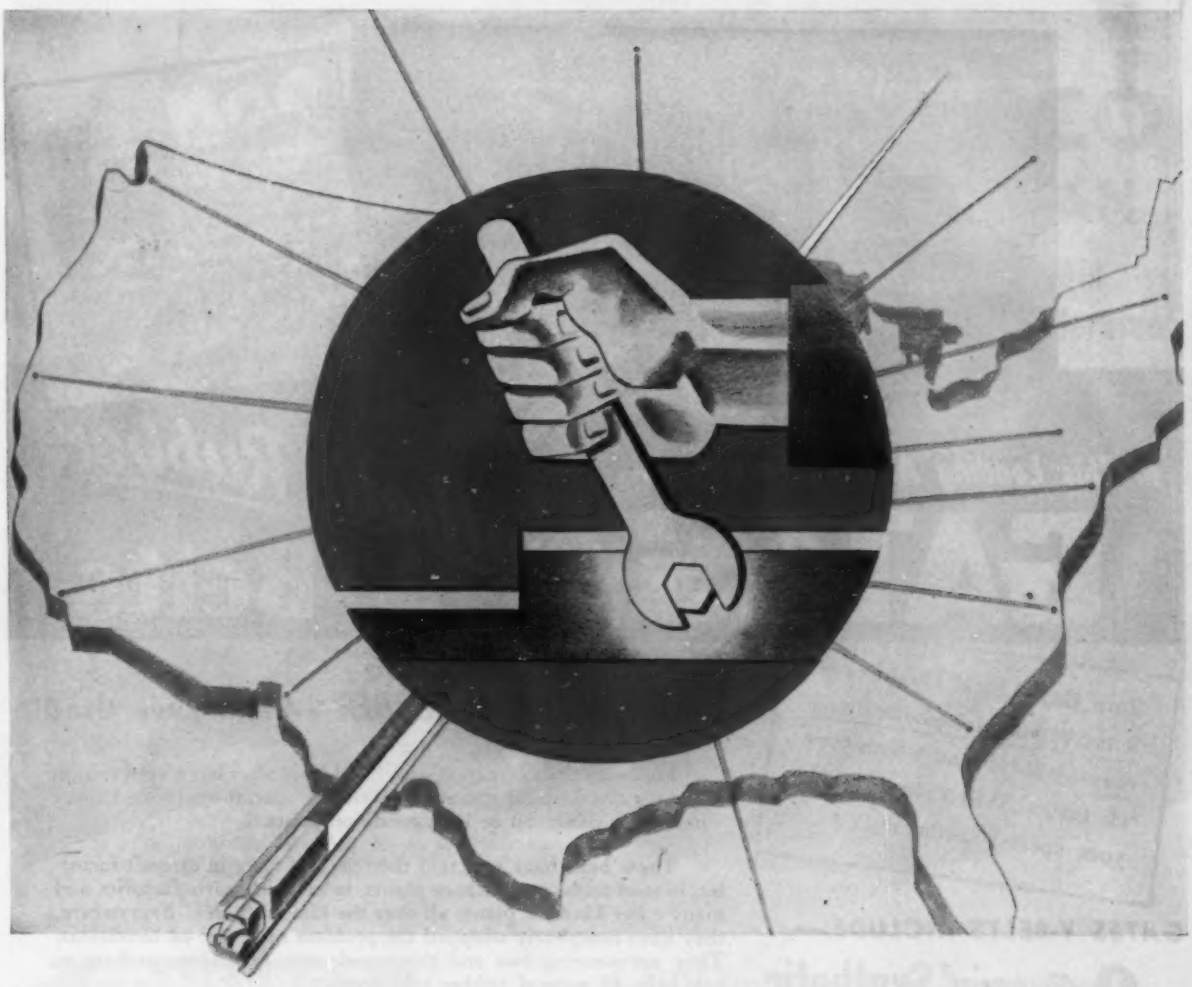
If you are doing the job now with even three, four or five trucks, the chances are that you can do it better with only one truck the Dempster-Dumpster way. Yes, with only one of your present trucks equipped with a Dempster-Dumpster Hoisting Unit, and with six, twelve, twenty-five, or any number of Dempster-Dumpster bodies your particular operation may require, you can do the job better while you save on trucks, tires, gas and precious manpower.

If you have never seen the Dempster-Dumpster work, then you can't comprehend its efficiency or how simply and easily it can be adapted to your use.

Let us tell you where you can see this remarkable materials handling equipment in actual operation.



DEMPSTER BROTHERS, Inc., 344 Springdale, Knoxville 17, Tenn.



You get service and supply from PIONEER DISTRIBUTORS

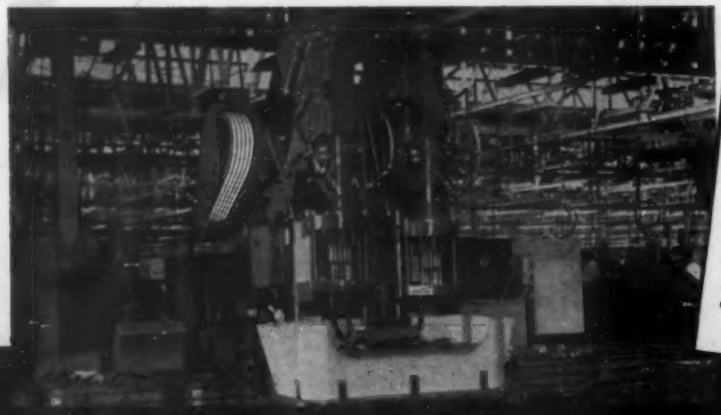
● Strategically located to best serve the needs of producing areas, each Pioneer Distributor is a depot of service and supply, staffed, equipped and immediately available to put equipment back into action—to keep an operation going. Each Pioneer Distributor is prepared to help you.

Emergencies demand action. Delays are costly. From the shops of Equipment Distributors, from their stocks, their manpower and their field representatives come important and vital services. Only with distributors could the economies and efficiencies that prevail in our basic construction industries have been developed to their present high degree.

Pioneer presents its distributors as an invaluable source of essential maintenance, repair and parts. Pioneer Distributors are well able to serve with ideas and suggestions on new equipment which may be available. Look to your Pioneer Distributor to keep your equipment equal to all requirements.



MINNEAPOLIS 13, MINNESOTA



✲Here, in one of the nation's leading Aircraft factories, belts on some machines were subjected to a severe oil condition. The Gates Field Engineer recommended Gates V-Belts of special synthetic rubber. Carefully kept records show that these belts are regularly wearing 3 times to 4 times as long as ANY belts of natural rubber ever used.

In This Leading Aircraft Factory . . . .

GATES ✲Synthetic Rubber V-Belts

Your Gates Field Engineer—listed in your telephone directory—will tell you which type of Gates V-Belt best meets your special needs.

Wear *3 TIMES* as *LONG* As Any *NATURAL RUBBER* V-Belts Ever Used!

For more than *6 years*, Gates Field Engineers have been recommending and installing Gates V-Belts of special synthetic rubber wherever a severe oil or heat condition exists.

These belts have now told their service story in aircraft factories, in steel mills, in ordnance plants, in machine parts factories and many other kinds of plants all over the United States. *Everywhere*, they have completely whipped the problem of severe oil conditions. They are wearing two and three and even *four times* as long as any belts of *natural rubber* ever used.

Isn't this a convincing illustration of what you stand to gain by calling the Gates Field Engineer whenever you have the slightest trouble with any drive problem?

You may not have an oil or heat problem — yet *other* service conditions may be such that a V-belt of some special construction can most profitably be used. For example, in your particular installation, Static-Safety V-belts may best fit your special need. Again, Rayon Cord V-belts or V-belts with tension members composed of flexible steel cables may prove to be the most efficient and economical.

In any case, the wisest move you can make is to phone the Gates Field Engineer. He is thoroughly competent to analyze any drive problem. He is completely informed on the nature and advantage of every type of belt. He will always recommend the practice that will be most efficient and economical for you.

GATES V-BELTS INCLUDE:—

1. *Special* Synthetic V-Belts
2. Static-Safety V-Belts
3. Cotton Cord V-Belts
4. Rayon Cord V-Belts
5. Steel Cable V-Belts

444

THE GATES RUBBER COMPANY

Engineering Offices and Stocks in All Large Industrial Centers

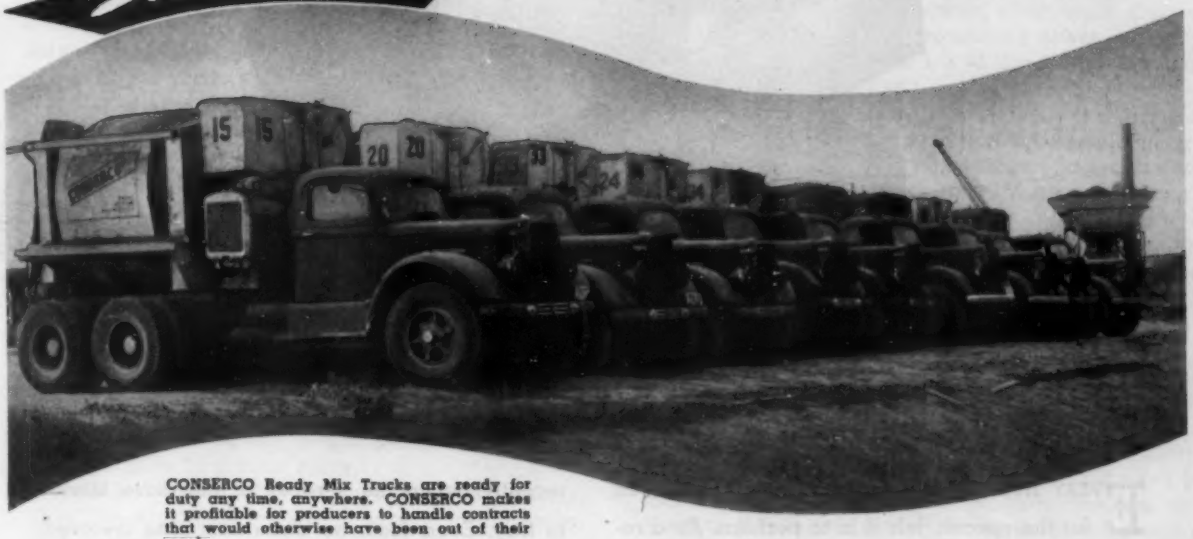
GATES VULCO ROPE DRIVES

CHICAGO, ILL.	**NEW YORK CITY**	**ATLANTA, GA.**	**LOS ANGELES, CAL.**	**DENVER, COLO.**
549 West Washington	215-219 Fourth Avenue	738 C & S National Bank Building	2240 East Washington Boulevard	999 South Broadway
DETROIT, MICH.	**PORTLAND, ORE.**	**DALLAS, TEXAS**	**SAN FRANCISCO, CAL.**	
8663 Grand River Avenue	333 N. W. 5th Avenue	2213 Griffin Street	1090 Bryant Street	

A BOON TO THE *Ready-Mix Industry*

the CONSERCO "7 POINT" PLAN

for Complete Ready Mix Concrete Truck Rental Service



CONSERCO Ready Mix Trucks are ready for duty any time, anywhere. CONSERCO makes it profitable for producers to handle contracts that would otherwise have been out of their reach.

CONSERCO "7 POINTS" PLAN

1. Mixer and truck complete in sizes of 3, 4 or 5 cu. yd.
2. Experienced drivers.
3. Gasoline.
4. Oil.
5. Maintenance of truck and mixer.
6. Insurance.
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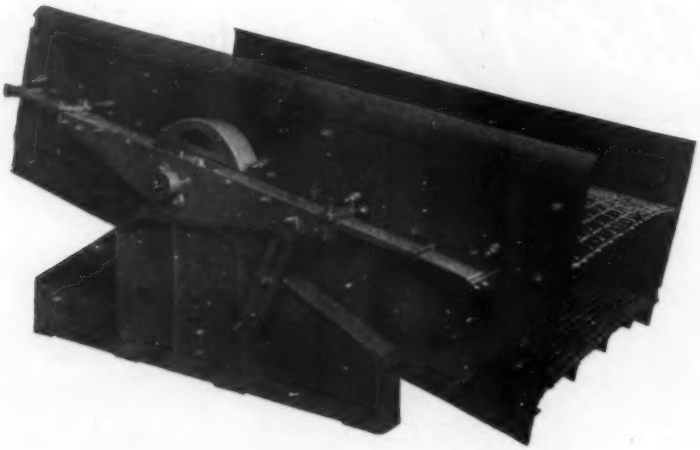
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THEY SET RECORDS LIKE THIS • • •

EVERY Robins Vibrating Screen is engineered for the specific job it is to perform. As a result, it is able to serve not only efficiently, but enduringly . . . and economically.

A typical instance was told to us recently. Twelve years ago, a sand and gravel plant purchased a Robins Gyrex Screen. That Screen was hung out in the open air—suspended in the members of a truss . . . exposed to the elements constantly. Every bit of material entering that plant passes over the Gyrex for rinsing.

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Robins makes Vibrating Screens of various types for all sizing, scalping and dewatering purposes. All are engineered individually for each particular application . . . given the correct speed, stroke, pitch and number of decks required for the kind, weight, mass, flow and quantity of bulk material to be sized and handled. For detailed recommendations, without cost or obligation, address Dept. RP-4.

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ROCK PRODUCTS

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LABOR SHORTAGE HINDERS LIMING PROGRAM

MANPOWER shortages in the agricultural limestone industry have a greater significance to the writer, who is a city dweller, since his return from a recent trip through the dairy farming country of southeastern Minnesota. For that matter, any shortages that will prevent the delivery of agricultural limestone *on* the farms have taken on added meaning.

One of our producer friends, who fully understands farming, placed his car at the writer's disposal in order that he could become acquainted with the farming area and its requirements to maintain a high level of crop production. After visiting some of the progressive farms, conversation with local men interested in agriculture and a tour through one of the many cooperative creameries, the writer was deeply impressed. It is surprising the volume of dairy products that one of the small creameries produces each day and how much of it is earmarked for military consumption.

These creameries depend upon the dairy farms for an uninterrupted supply of milk, and the progressive farmers supplying them depend upon agricultural liming materials for the production of sufficient hay and alfalfa to feed their herds.

There is a demand this year in Minnesota for something like double the tonnage of agricultural limestone that was spread on the fields in 1943. Throughout the dairy farm area, which is in great need of liming materials, there is a plentiful supply of suitable limestone and sufficient production capacity to meet the 1944 goals, but the lack of manpower, particularly truck drivers, is jeopardizing the production of dairy products.

Everywhere we went, farmers would ask our producer friend when they might expect deliveries of agricultural limestone. The stock answer was, "we have 3000 tons of pulverized limestone in stockpiles but we have no drivers." There is a shortage of hay and alfalfa crops in Minnesota now, and the shortage could well become acute unless farm deliveries of agricultural limestone can be made. Agricultural limestone in stockpiles can do no good, of course.

Liming of the soil increases crop yields and there are farmers in this area who recognize the essentiality of liming materials to the extent that they will not plant hay crops unless liming materials be made available on their farms before seeding time. At 50c a pound for alfalfa seed, they would rather not risk a poor crop.

Producers in Minnesota, or any agricultural States with acid soils, are operating their plants at a high level of production, recognizing that time lost from production is irretrievably lost, under today's demands. Agricultural Adjustment Agency contracts for agricultural limestone in Minnesota are bid in at a relatively low delivered unit price and, in the case of our producer friend (and others) prices are no doubt based on the premise that delivery be made direct from the live plant bins to the farms.

Many producers throughout the country are probably in the same fix as he is with respect to manpower. To move his production requires seven truck drivers. As this is written, his one remaining driver, a family man, had been reclassified 1-A in the draft, subject to immediate call to service.

This past winter had been mild, with the farmers' fields generally in good condition for spreading, yet half of his production for February had to accumulate in stockpiles at a time when the farmers were clamoring for delivery. The plant is now being moved to another quarry, since our producer friend restricts his length of haul to 12 miles, to produce his contracted tonnage for another area. He hopes, by some "miracle," to be able to return and make deliveries from the stockpiles he is leaving behind.

Thus, the farmers are not getting deliveries and the producer has a sizable investment, for a small operation, tied up in finished product. It costs him 10c a ton to stockpile it and 20c to rehandle it into trucks (if he gets drivers). So, he is taking a loss of 30c a ton in income since, we are certain, consideration was not given to this unforeseen circumstance in establishing his bid price. He probably has also suffered a loss due to shrinkage in stockpiles, since the material is sold by the ton but the number of tons is actually measured by volume into the trucks.

He has tried shutting down the plant, with his plant men driving the trucks, but obviously could not continue the practice if he is ever to fulfill the demands made upon his plant. Night deliveries have proved unsuccessful. The farmers have no delivery equipment and hired truckers do not have drivers available. Replacement schedules filed with the United States Employment Service long ago have not made a single driver or operating man (two of seven left are 1-A) available. The wage scale may be a factor in hiring new men and, if so, along with other losses being assumed surely should become a factor in establishing more favorable prices for agricultural limestone.

Our producer friend is threatened with absolute shutdown of an operation essential to the war food program. We do not know the solution, but hope that he and others may secure relief through the offices of interested governmental agencies. They say that food production must break all previous records. Agricultural limestone, spread on soils that require it, is necessary to attain the goals set.

Bror Nordberg



FACE LIFTING

WHETHER "lifting" the face of a mountain, boring a tunnel, building Army and Navy bases or airport runways, one of a contractor's first considerations is Compressed Air.

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FOR ALL CONTRACTORS' EQUIPMENT

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Washington NEWS

MEMBERS of the mining industry submitting applications to W.P.B. for new equipment will use a new form known as WPB-1319. So far as mine serial holders are concerned, WPB-2910 has been eliminated. Producers without mine serial numbers will use WPB-2910 in applying for a higher preference rating than AA-5 for maintenance, repair or operating supplies. Heretofore P-56 required companies to file WPB-2910 applications directly with the Mining Division for new equipment. In the case of new equipment listed on Schedule A of the L-192 Order, companies were required to File WPB-2910 applications with the Mining Division simultaneously with the filing of WPB-1319 applications with the Construction Machinery Specialist of the nearest WPB regional office.

While the industry is still prohibited from obtaining maintenance, repair or operating supplies on any preference rating except after filing an application with the Mining Division, all new equipment is henceforth applied for on WPB-1319. With the exception of new equipment listed on Schedule A of L-192, the 1319 application is submitted directly to the Mining Division in Washington; for new equipment listed on Schedule A of L-192, the 1319 application is submitted to the Regional Construction Specialist of the nearest W.P.B. regional office, but in that event, no simultaneous filing with the Mining Division is required, nor is it necessary to send the Mining Division a copy of the 1319 application.

Restrictions on Repair Parts

W.P.B. Limitation Order L-192 as amended March 7: This amendment provides that in addition to the certification on purchase orders required under the priority rules, there are now three different types of procedures for the procurement of repair parts. If a producer seeks to obtain repair parts for any piece of equipment listed on Schedules A and B of L-192, he must place the following endorsement on purchase orders in addition to other required endorsements: "Authorized under L-192-current use." This certification constitutes a representation to the W.P.B. that the repair parts ordered are required to replace worn out parts within 30 days after receipt of the parts ordered and are not for stock; that the purchaser does not have other parts on hand or on order with any other supplier for this purpose; and that the purchaser has complied with L-196, which no longer applies to the rock products industry. Subparagraph (j) (1) of L-192 is intended to prohibit the purchase of repair parts for stock.

The certification required on purchase orders for repairs for current use, is inapplicable in the case of parts orders over $1000 if such parts are to be used for crawler, walker or truck type shovels, cranes or draglines, with a rated capacity of less than 2½ cu. yd. In the case of parts orders exceeding $1000 for current use for such machines, a WPB-1319 application, in quadruplicate, must be forwarded to the Construction Machinery Division, W.P.B., Washington, D. C.

Subparagraph (j) (4) establishes a procedure for obtaining repair parts for stock. Applications are submitted on WPB-1319 to the Construction Machinery Division, W.P.B., Washington, D. C. When approved, purchase orders must carry the following endorsement: "Authorized under Order L-192-on Form WPB-1319."

Concrete Products Machinery

W.P.B. Limitation Order L-123, as amended February 28: A new minimum preference rating of AA-5 or better, designed to curtail distribution, has been established for 22 classes of industrial equipment. Previous requirement had been A-1-c or better. Included in the 22 classes of equipment are: concrete products machinery, such as block, brick, pipe or conduit manufacturing machines, hoists, pallets, etc. Also included in the list are dust collectors, compressors, pumps, and high pressure blowers. The amended order, L-123, no longer applies to conveying machinery and mechanical power transmission equipment, which are covered by Limitation Order L-193. This change of restrictions on delivery of these items is accomplished by the revocation of four Limitation Orders: L-100, L-172, L-246 and L-280 and by an amendment to Limitation Order L-123, which supersedes former Interpretations 1, 2 and 3 of the order, which are also revoked.

Cement Restrictions

SCHEDULE ONE of General Haulage Conservation Order T-1 was recently discussed by the Portland Cement Industry Advisory Committee, W.P.B. A task committee of three to five members will study the problem of how to conserve transportation facilities either through modifications of Schedule I or through other methods, and submit its recommendations to the Industry Advisory Committee.

Relaxation of Order L-179, which limits the manufacture of portland cement to three types, was discussed. When originally issued in August, 1942, the order was designed to increase production by an estimated 20 percent. Committee members agreed that the order is no longer necessary since there is now no shortage of cement. It was recommended that if the order is revoked or relaxed, a transition period should be provided for the disposal of a portion of the stocks manufactured under its limitations, and for the initiation of manufacture of types not now permitted.

Exemption from Renegotiation

The new Renegotiation Act exempts from renegotiation contractors or subcontractors whose aggregate receipts or accruals from contracts with the Departments of the government subject to the Act, as well as subcontracts, do not exceed $500,000 in any full fiscal year ending after June 30, 1943.

Contracts for the furnishing of materials or supplies or for the lease or sale of machinery or equipment are not deemed to be within the scope of this provision of the Act, according to an O.W.I. release. The Renegotiation Board has ruled that contracts or subcontracts are exempt where the following conditions exist:

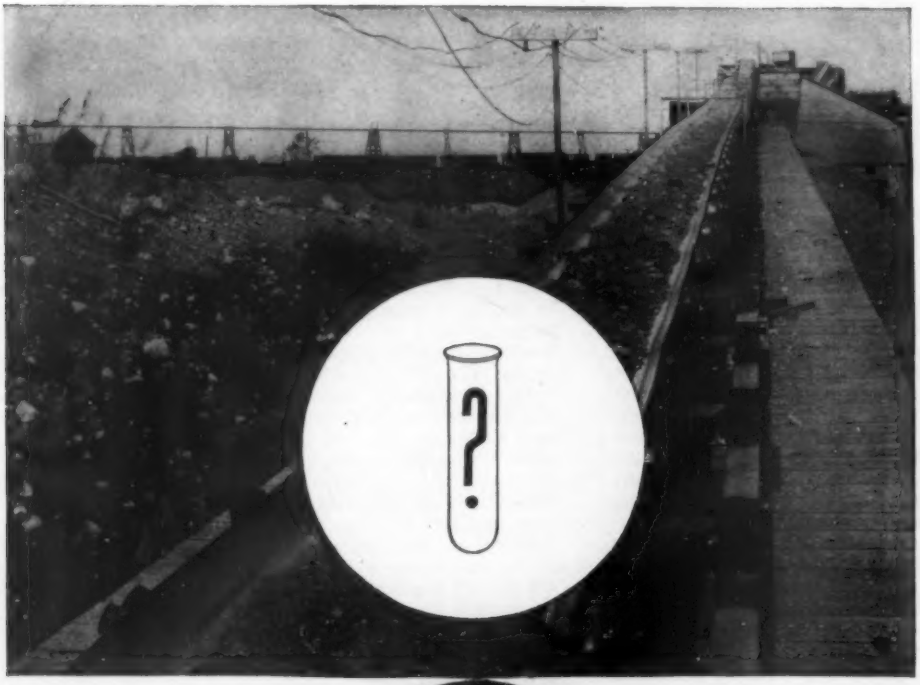
(1) The contract or subcontract is one for the construction of buildings, structures, improvements or other similar facilities. Subcontracts for the furnishing of materials or supplies or for the lease or sale of machinery or equipment are not within the scope of this exemption.

(2) The contract was entered into subsequent to June 30, 1943, and did not constitute a substitute for or a revision or extension of an existing contract entered into on or before June 30, 1943.

(3) The work covered by the contract was substantially the same as the work for which the bids were requested.

(4) Bids were received from two or more responsible and qualified contractors, who were independent of each other and were in actual competition with each other for the work for which bids were requested.

(5) The contract price was not in excess of the low bid received.



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Prior to Pearl Harbor, when generous quantities of Crude Rubber were available, we knew what service a Quaker Conveyor Belt would give on installations that handled thousands of tons of sand, gravel, crushed stone, cement and kindred materials. Belts of Quaker manufacture were in use in thousands of places under actual working conditions that day after day, month after month, extending to year after year, they were giving service that brought the cost per ton of material conveyed down to the bottom figure.

But, what about Belts from All-American (Synthetic) Rubber?

Gruelling laboratory tests now say: "Yes". Sufficient time has not yet elapsed to get the answer what All-American Rubber Belts will do. We have the utmost confidence that Quaker All-American Belts now in actual use will confirm what the laboratory now tells us.

You can order your Belt today, as well as other Industrial Rubber Products, with complete assurance of receiving finished material that will give you the service you expect.

Quaker Products, made from Crude Rubber or All-American Rubber (Synthetic) are the best the Rubber Manufacturing Industry can offer.

If there is a way to get it done—Quaker will do it.

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News ABOUT THE INDUSTRY AND PEOPLE

A.C.I. President

ROY W. CRUM, Washington, D. C., director of the Highway Research Board of the National Research Council, was elected president of the



Roy W. Crum

American Concrete Institute at its 40th annual convention. Vice-presidents elected were DOUGLAS E. PARSONS, Washington, D. C., chief of the Masonry Section, National Bureau of Standards; and JOHN R. NICHOLS, Boston, consulting engineer. HARVEY WHIPPLE, Detroit, was elected secretary and treasurer.

Lime Superintendent

STANLEY ARNOT has resumed charge of the U. S. Lime Products Corp. plant at Sonora, Calif., replacing M. E. Newlove, superintendent, who has been transferred to Leadville, Colo.

Appointed Chief Engineer

WALTER C. RICHARDS has been appointed chief engineer of A. Leschen & Sons Rope Co., St. Louis, Mo., succeeding the late Charles K. Traber. Mr. Richards has been with the company since 1919. He was assistant to Mr. Traber for 15 years. At Mr. Traber's death he became acting chief engineer. He is a graduate of the School of Mines and Metallurgy of the University of Missouri.

Joins Foremen's Institute

BRUNO R. NEUMANN, until recently senior economist with the planning division of the War Production Board, has joined the National Foremen's Institute, Inc., Deep River, Conn., as labor economist and editorial director, with headquarters at 527 Fifth Ave., New York, N. Y. Prior to his service with the W.P.B., Mr. Neumann was a member of the economic research staff of the National Association of Manufacturers. He has had experience abroad with economic and labor relations problems in Great Britain and other European countries as well as the United States.

Asphalt Chairman

F. V. WIDGER of The Texas Co., New York, N. Y., has been elected chairman of the executive committee of The Asphalt Institute.

Other members of the committee are: J. A. Blood, Standard Oil Co. of California; F. R. Field, Standard Oil Co. of New Jersey; A. M. Maxwell, Standard Oil Co. of Ohio; H. B. Pullar, Berry Asphalt Co.; D. D. Williamson, Talco Asphalt & Refining Division, Southport Petroleum Co. of Delaware; and H. R. Pauley, The Petrol Corp.

Bernard E. Gray was reelected general manager and chief engineer, and Herbert Spencer was again named president. George R. Christie, Standard Oil Co. of New York was reelected secretary and treasurer, with John N. Smith of the same company continuing as assistant treasurer.

Member of Controllers

F. W. HOFFMEYER, treasurer and assistant secretary of the J. E. Baker Co., York, Penn., has been elected to membership in the Controllers Institute of America. The Institute is a technical and professional organization of controllers devoted to improvement of controllership procedure.

Lehigh Appointment

ROY N. YOUNG, chemical engineer of Lehigh Portland Cement Co., Allentown, Penn., has been made assistant vice-president and operating manager of the company.

With Diamond Alkali

LEWIS WELSHANS, who for the past ten years has been with the Standard Lime and Stone Co., Baltimore, Md., where he served successively as control chemist, plant foreman, plant superintendent, development engineer and director of research, has joined the Research Department of Diamond Alkali Co., Painesville, Ohio. Mr. Welshans will supervise the department's activities involving magnesium oxide and magnesium derivatives. A member of the American Chemical Society, Mr. Welshans holds a degree of B.S. in chemistry from West Virginia University. He also studied as well as taught at Shepard College and the University of Virginia.

Resigns

CHARLES A. FRANKENHOFF, chairman of the board of directors of The Dicalite Co., with offices in New York, N. Y., and Los Angeles, Calif., has resigned from the company, temporarily, making his headquarters at his home in Scarsdale, N. Y. Mr. Frankenhoff organized The Dicalite Company, of which he was president and general manager, 14 years ago. He resigned as president last July but continued his connection as a director and chairman of the board. Prior to organizing the company, Mr. Frankenhoff was manager of the Central Division of the Celite Products Company, before it was purchased by Johns-Manville Corp. in 1928.

Repairing Gravel Plant

THE MARIBEL GRAVEL CO., Manitowoc, Wis., is making extensive repairs to its sand and gravel plant in preparation for a large post-war business.

Gypsum Vice-President

DEAN DEFOREST CRANDELL has been elected vice-president in charge of research of the National Gypsum Co., New York, N. Y., according to an announcement by Melvin H. Baker, president of the company. Mr. Crandell, who joined the gypsum company in 1927 and became director of research in 1928, is 44 years of age and



Dean DeForest Crandell

a graduate of Cornell University, class of 1922. He is credited with the development of exterior gypsum building boards and roof planks that have been responsible in relieving the critical lumber shortage for needed wartime building.

A.C.I. Past President Nominated Vice Admiral

REAR ADMIRAL MOREELL, chief of the Bureau of Yards and Docks and a past president of the American Concrete Institute, has been nominated by President Roosevelt for promotion to vice admiral, subject to confirmation by the Senate. Admiral Moreell, a Civil Engineer Corps officer since 1917, when he entered the Navy from civilian life four years after graduation from Washington University, St. Louis, has had wide experience in the Bureau of Yards and Docks before becoming its chief in 1937. In 1918 and 1919 he was in the Azores, and then for four years in Haiti. In 1926, as assistant design manager of the Bureau, he wrote a manual on concrete design, which is still considered one of the best treatises available on the subject. Later, he spent a year in France studying concrete design methods used there. He has been public works officer at the Puget Sound Navy Yard at Seattle and also at Pearl Harbor. Admiral Moreell is an honorary member of the American Society of Civil Engineers.

Heads Magnesium Division

K. T. VANGSNES, for the past five years vice-president of Magnesium Products, Inc., Los Angeles, Calif., has been named head of the magnesium division of Dow Chemical Company's Los Angeles office.

Named Vice-President

SYDNEY L. SCHULTZ has been appointed vice-president in charge of sales of The National Grave Vault Co., Galion, Ohio.

C. of C. President

ELMER HAYS, president of the Belton Sand and Gravel Co., Belton, Texas, has been elected president of the Belton Chamber of Commerce, succeeding Roy J. Smith, who has resigned.

Moves to New York

FRED T. WIGGINS, sales manager of the Universal Atlas Cement Co., Birmingham, Ala., has been appointed assistant to the vice-president of general sales, New York, N. Y.

Talks About Cement

GORDON TONGUE, secretary-treasurer of Superior Portland Cement, Inc., Seattle, Wash., gave a talk recently before members of the West Coast Mineral Association on "The Drama of Cement Making."

Given Honorary Award

SOREN H. MORTENSEN, chief electrical engineer for Allis-Chalmers Manufacturing Co., Milwaukee, Wis., has been awarded an honorary Doctor of Engineering degree by the Illinois Institute of Technology, Chicago, Ill., for distinguished leadership in the development of alternating current machinery.

Heads New Office

WALTER J. TRUETTNER will head the new office of Dow Chemical Co., in Detroit, Mich., which was opened on April 1. Mr. Truettner has been actively associated with the Dow Magnesium Corp. since February, 1942. He has resigned his position as secretary of the Marysville plant to take over his new duties in Detroit. RALPH B. EHLERS, assistant chief engineer, will be located at the new office in charge of magnesium distribution and service in southeastern Michigan. Other members of the Detroit office will be Paul M. Jensen, in charge of plastics, and Fielding H. Yost, Jr., in charge of industrial chemicals and pharmaceuticals.



Walter J. Truettner

Awarded Safety Trophy

W. E. TIPPIN, safety engineer for the Southwestern Portland Cement Co., Los Angeles, Calif., has been awarded the safety trophy for outstanding work in the promotion of safety and accident prevention in the El Paso, Texas, plant of the company. The award was made by J. M. Lancaster, secretary of the El Paso Safety Engineers Council.

Standards Officials

GEORGE N. THOMPSON of the National Bureau of Standards and Walker S. Lee, Building Officials Conference of America, have been elected chairman and vice-chairman, respectively, of the Building Code Correlating Committee of the American Standards Association, New York, N. Y.

Chile's Representatives Visit Gypsum Plant

JOHN C. BEST, vice-president in charge of industrial sales, National Gypsum Co., New York, N. Y., recently played host to Modesto Collados of the Chile Housing Board and Hernan Fuenzalida of the Chile Development Corp. when they visited the administrative offices of the company in Buffalo and the Clarence Center, N. Y., plant to get ideas on housing. The Government of Chile is planning to carry out a housing program that includes the building of approximately 5000 housing units a year.

Cut Magnesium Production

WAR PRODUCTION BOARD orders were sent out recently reducing production of magnesium in five plants from 35 to 100 percent. It is said that production had been running 8 to 10 million pounds a month above requirements, and a two months' stock pile has been accumulated. Production was halted entirely at the Dearborn, Mich., plant of Ford Motor Co., and at the Mathieson Alkali works at Lake Charles, La. Fifty percent cuts were ordered for the Electro Metallurgical Co., Spokane, Wash., and the Permanente plant in California. A 35 percent cut was ordered at the Amco Magnesium Corporation, Wingdale, N. Y. As the Permanente plant was the only one operating at 100 percent capacity, the cut is not as heavy as it appeared.

Cement to South Pacific

CALIFORNIA cement plants have been shipping a very substantial volume of cement to the South Pacific on orders for the Army and Navy. One plant recently obtained an order from the Navy for 125,000 bbl. New airports and fortifications undoubtedly are being built on many of the islands recently wrested from Jap control.

Gravel Authority Dies

DR. H. A. BUEHLER, widely known in the sand and gravel and crushed stone industries, particularly in Missouri and Wisconsin, died recently at the age of 67. State geologist of Missouri since 1908, Dr. Buehler compiled some very complete geological reports covering sand and gravel and stone.

In the Navy

JOHN M. KASER, partner in the Kaser Construction Co., Adel, Iowa, has joined the U. S. Navy.

Improvement Program for Lawrence Portland

ABOUT $250,000 will be spent by Lawrence Portland Cement Co., Thomaston, Me., for an expansion and improvement program of the plant in preparation for the post-war era.

The redesigning of this plant will improve a stage in the processing and will also reduce operating costs. Basically the idea is to reduce the cost of fuel. The kilns will be extended 200 ft. to 400 ft., which will necessitate complete redesigning of the machinery and kiln building.

Although the Lawrence plant now manufactures the only cement in New England, it was not the first in Maine to turn out the product. In 1870, the Cobb Lime Co., an important producer of lime, began to make portland cement. However, owing to the high cost of fuel the product was too expensive for commercial success. Nevertheless, the advantages of a New England plant, operating with modern equipment, became increasingly apparent, and in 1927 the Lawrence Portland Cement Co. acquired the properties of the old Cobb Lime Co. The actual mill was completed in 1928.

Ohio Court Rules Sand and Gravel Is "Mining"

Ohio Supreme Court on March 8, by unanimous decision, reversed the Board of Tax Appeals and ruled that sand and gravel was a "mining" operation. The court held that equipment used in the production of sand and gravel by strip mining for commercial sale is exempt from State sales and use taxes. The suit was brought in the name of F. H. Bailey & Son.

Plan Slag Plant

KAISER COMPANY, INC., iron and steel division, Oakland, Calif., has been working on the problem of utilization of blast furnace slag as railroad ballast and for other uses. A small temporary screen for sizing slag has been installed. It is planned to install a more permanent plant at a later date.

Purchase Gravel Concern

MCGRATH SAND & GRAVEL CO., Lincoln, Ill., has purchased the Springfield-Pekin Sand and Gravel Co., Pekin, Ill. Operations at the Pekin, Ill., plant were scheduled to start up on March 1.

Missouri Agstone Contract

RAYMOND HOPPER, Kingston, Mo., has received an order to deliver 10,000 tons of agricultural limestone on A.A.A. contracts. The price is $2.50 per ton delivered and spread on the farms, and $2.25 per ton delivered to the farm with sales made at the quarry at $1.50 a ton. Supplies are received from Houghton quarry, Kingston, Mo., James Quarry near Braymer, Mo., and also some rail shipments from Stewart Sand and Material Co., Kansas City, Mo.

Big Agstone Sales

DOLESE & SHEPARD CO., Chicago, Ill., reported that sales of quarry products during the first six months of 1943 had exceeded expectations and amounted to 60 percent of total sales volume of these products for the entire year. There was a substantial reduction in the sales of commercial stone and flux stone in the latter part of the year, but the sales of agricultural limestone during the last six months of the year were approximately five times greater than such sales during the previous six months. Although total sales of quarry products, measured in terms of cubic yards, decreased three percent as compared with the year 1942, gross profit from quarry operations substantially increased due, in the main, to better selling prices and lower cost of production.

Agstone sales in 1943, according to the annual report, amounted to approximately 20 percent of total sales volume, and it is anticipated that the demand for this product will increase. To facilitate the production of agstone, new screens have been installed. It is expected that flux stone sales during the first six months of 1944 will be satisfactory, but the volume of commercial stone sales is problematical.

Grant Gravel Permit

GRAHAM BROS., Los Angeles, Calif., has been granted an emergency permit for a gravel pit and crushing plant installation near El Modena, Calif. Included in the Board's approval of the permit is an agreement that the concern may operate for the duration of the war and one year thereafter, when it must level the ground and remove all machinery. Site of the installation will be an 80-acre hill a half a mile west of the junction of Orange Park Acres. The company plans a plant with a capacity of 200 tons daily.

Add Block Equipment

RALEIGH BRICK CO., Fairview Road, Raleigh, N. C., recently installed a new Korpak stripper block machine. This company also operates a Besser block machine. A. V. Ray is plant manager.

Quarry Changes Owners

CATAWBA LIMESTONE CORPORATION, Catawba, N. C., has been purchased by J. B. Ross & Co. This company produces agricultural limestone.

Buy Sand Plant

THE LOWER CREEK SAND CO., Lenoir, N. C., has been purchased recently by W. D. Tuttle. Mr. Tuttle will operate the company under the old name.



Official U.S. Marine Corps Photo

Portable crushing plant set up by Army Engineers to provide material to recondition the Cape Gloucester airport. The engineers set up the plant after the Marine invaders crushed the Japs and took the airport

Continue Housing Program

SINCE the summer of 1940 and up to January 31, 1944, 1,479,502 housing accommodations have been completed under the war housing program. Of this grand total, 1,277,820 are new units and 201,682 were provided through the conversion of existing structures into additional units. Privately-financed new construction totaled 638,025 units. Completions of new publicly-financed war housing total 639,795 units and include 443,978 family units, 148,087 dormitory units for single workers and 47,730 stopgap units comprised of trailers and other portable shelter. Almost all publicly-financed housing now being built is of temporary construction whereas the privately-financed units are of permanent type and will continue in use after the war.

Housing under construction on January 31 totaled 173,716 units and included 76,564 new publicly-financed units and 74,110 new privately-financed units. During January 15,604 new units were placed under construction. This total included 6121 publicly-financed and 9,483 privately-financed units.

Missouri Increases Agstone Use

DURING the 1943 A.A.A. program 1,022,566 tons of ground limestone and 52,760 tons of commercial fertilizer were delivered to Missouri farmers in lieu of cash payments earned by them under the program. This amount of limestone, which was applied on approximately 450,000 acres of cropland and pasture, compares with 507,770 tons advanced in lieu of cash payments in 1940 (the first year A.A.A. advanced conservation materials in lieu of payments), 950,677 tons in 1941, and 1,268,202 tons in 1942. For 1944, the A.A.A. is making every effort to secure as much limestone as produced and delivered in 1942.

Lubrication Information

THE TEXAS COMPANY, N. Y., has devoted the March, 1944, issue of its publication *Lubrication* to the subject of construction machinery lubrication. This 28-page publication may well be read with interest and value by the rock products industry. Pages 24 to 28 are particularly adaptable to the industry's problems.

Pavement Yardage

AWARDS of concrete pavement for February, 1944, have been announced by the Portland Cement Association as follows:

	Square Yards Awarded During February, 1944
Roads	324,507
Streets and Alleys	429,450
Airports	1,670,154

COMING CONVENTIONS

Concrete Pipe and Products Association, Seattle, Wash., Annual meeting, June or July, 1944.

National Chemical Exposition, American Chemical Society, Chicago Coliseum, Chicago, Ill., November 15-19, 1944.

National Industrial Sand Association, Annual Meeting, The Homestead, Hot Springs, Va., June 8-9, 1944.

National Lime Association, Open Meeting, Board of Directors, The Homestead, Hot Springs, Va., May 16-18, 1944.

Lease Quarry

STEEL TRANSPORTATION CO., INC., Kansas City, Mo., has leased a quarry property from Harriett Williams Cowell. The quarry will be operated for the production of aggregates for a concrete pipe plant and a ready mixed concrete plant.

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J. P. Henkins and M. E. Clevenger, members of the New York township board, Hamilton, Mo., have leased the quarry to Melbourn James for an indefinite period.

Sand-Lime Brick Production and Shipments

FOUR active sand-lime block and brick plants reported for February and four for January, statistics for which were published in March, 1944.

AVERAGE PRICE FOR FEBRUARY

	Plant Price	Delivered Price
Detroit, Mich.	....	$16.00
Saginaw, Mich.	$15.00	....
Grand Rapids, Mich.	....	15.00
Seattle, Wash.	19.50	22.50

	*January	†February
Production	1,218,000	938,875
Shipments (rail)	281,000	.....
Shipments (truck)	793,600	941,998
Stocks on hand	607,000	667,000
Unfilled orders	1,200,000	1,170,000

*Four plants reporting: incomplete, one not reporting stocks on hand and two not reporting unfilled orders.

†Four plants reporting: incomplete, one not reporting stocks on hand and two not reporting unfilled orders.

Inter-American Highway

ALTHOUGH U. S. Army Engineers have been withdrawn, construction work on the Inter-American Highway will continue under arrangements made with the governments of the countries along the Middle America section.

Honduras, Costa Rica, El Salvador and Nicaragua will have the assistance of the U. S. Public Roads Administration. Guatemala will spend an amount equal to the $8,000,000 worth of road building equipment left by the Army Engineers. Panama and Mexico are completing arrangements to continue the highway.

A total of 560 miles of road remains unprovided for on the 3400-mile route from Texas to the Panama Canal. Edwin L. James, chief of the Inter-American Regional Office of the Public Roads Administration, says that it is now possible to drive in the rainy season all the way from Tapachula, Mexico, near the Guatemalan border, to the southern boundary of Nicaragua and in the dry season motorists can drive to Angostura in central Costa Rica. Angostura is 1109 miles from Tapachula.

Phosphate Problems

ORDERS for phosphate rock, for direct application in the grants-of-aid program, have been placed with Florida mines for use in Illinois and Kentucky, the only states to which it applies, according to a report from Tennessee phosphate sources.

Most of the Florida mill capacity is busy grinding for acidulators, or for direct application in Southeastern areas where freight rates are lower.

Tennessee producers were deterred from installing greater capacity before the emergency by the fear of government competition and now hesitate to attempt to increase grinding capacity because of the difficulty they would face in getting equipment and the manpower to operate it.

Apply for Dredge Permit

THE SMILEY SAND & GRAVEL CO., Owensboro, Ky., has applied to the U. S. Engineer Office, Louisville, Ky., for two permits to dredge sand and gravel in the Ohio river between Lonesome Hollow and Dam 45.

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NUGENT SAND CO., Louisville, Ky., has applied to the Army District Engineer's office for permits to dredge sand and gravel between Louisville, Ky., and Troy, Ind., and between Troy and Caseyville, Ky., on the Ohio river.

Buys Granite Company

BLAIR QUARRIES, INC., Columbia, S. C., has taken over the South Carolina Granite Co. D. E. Saunders is secretary-treasurer and general manager. E. L. Brantby is plant superintendent.

ROCKY'S Notes

A PRODUCER FRIEND recently said to me that suggestions I had told him through the years about the operation of his plants had saved him thousands of dollars. One of those suggestions, I remember, was for a surge bin or stockpile between his primary crusher and the rest of his plant. In those days nearly every operator used railway trains between shovels and primary crusher, with the result that the material went through the plant in surges or splurges, the machinery running idle between train-loads. That friend could have gotten the same idea from reading ROCK PRODUCTS, but he either had not read critically or had missed the point in a mass of verbiage. It is often so, and I am convinced that many good, useful, practical ideas are lost because they become enmeshed in wordy descriptions that discourage the average reader. Nevertheless, thorough reading, critical reading, of a worthwhile business or industrial journal, will prove it a mine of suggestive ideas, if the reader is susceptible to ideas so presented.

I always had the feeling that my associates thought I had a particularly easy job because I spent so much of my time reading contemporary business journals and newspapers, but I have always considered that one of the most important parts of an editor's job: First, because it keeps one informed on current developments in every industry which might affect this rock products industry; second, because it always crowded the mind with new ideas, that possibly could be developed to the advantage of ROCK PRODUCTS' readers. Such extensive reading is a tedious chore to many persons, and if it is, of course, it does the reader little good, because under such condition his mind is hardly receptive to imaginary ideas, or imaginary applications of ideas. Knowing the average person's reluctance to wade through articles that he fails to see have any application to his own business, as well as the lack of time the average business man has for this purpose, I have always felt an obligation to readers of ROCK PRODUCTS to keep an eye out for them, so that nothing really helpful and constructive would escape their attention if they were consistent readers of this one journal—a logical ambition but difficult of satisfactory attainment.

Now that I am, presumably, to have more leisure, my hope is to use this page regularly for short paragraphs based on my "professional" reading, including books, geological reports, business journal and newspaper articles, etc. These brief notes, or whatever they may be called, will sometimes at least include my own comments, and they will be designed to keep readers abreast of developments in the business and industrial world which concern them very vitally, if not now, sometime soon.

POST-WAR PLANNING: For its own members of the National Association of Manufacturers, and probably available to any employer who asks for them, is a series of five "guide booklets" on post-war planning. The first two, now out, cover internal organization for corporations and the elemental principles of market research and sales promotion. Emphasis is placed on having a program sufficiently developed to be put on paper. Every organization is doubtless *discussing* post-war plans and objectives, but the ones who have worked out the details and committed them to writing will be the ones who have the jump on their competitors. One never realizes how little he actually knows about any subject until he attempts to write about it for someone else. In organizations too small to have a "development department," some forward-looking officer or employee could be selected to make up a written plan. The foregoing is our own comment; the booklets themselves will prove useful to the ordinary guy if he can find useful suggestions detached from instructions written, obviously, for the big manufacturer.

ATTENTION CALIFORNIANS! Fred J. Grumm, assistant state highway engineer, in an article "Planning Well Advanced in California," in *Engineering News-Record* says: "Adequate base support and compacted subgrades are features of road design receiving their full share of attention. Otherwise, there has been little notable change in pavement design." That's encouraging, and interested producers should follow through. "Adequate base support" could, and maybe, should mean 6 to 12 or more inches of gravel or crushed stone subfoundation. California producers might enquire about some sub-base tests that presumably were made by their State Highway Department in 1923. The Highway Research Division of the National Research Council reported in December, 1922, that the California Highway Commission was about to try adobe subgrade treatment on sections of a state highway in Solano County between Denverton and Rio Vista. Section 1 of the experimental pavement was to have the subgrade mixed with portland cement to a depth of 12 in.; ratio 1:10; Section 2, the same with a 1:12 mixture; Section 3, to a depth of 6 in., 1:10 mixture; Section 4, to a depth of 6 in., 1:20 mixture; Section 5, subsoil treated to 12-in. depth with 1:20 mixture of soil and hydrated lime; Section 6 with pulverized limestone in place of hydrated lime, 1:20 mix; other sections used oil and soil mixtures for the subgrades. Have these experiments been lost sight of? Evidently a soil-cement mixture for stabilizing subgrades is n`thing new.

BALLASTING HIGHWAYS: More proof that good ideas often go by the board! Our recent discussions of the necessity of putting a subfoundation course of sand, gravel, crushed stone or slag under pavements attracted a lot of interest in the industry and through active participation by interested producers may lead to something. Consequently, I was quite startled in thumbing through the December 4, 1918, issue of ROCK PRODUCTS to come upon an article I wrote entitled: "Ballast Highways as Well as Railways." It consists largely of quotations from an article by R. W. James, general inspector, in the official bulletin of the Bureau of Public Roads, on the necessity of providing subgrades which would not pick up capillary water, pointing out that even what was considered adequate provision for drainage by other methods, would not serve the purpose of this "ballast," although he did not term it that. He did say: *"A great deal of subgrade will have to be reinforced by addition of suitable subbase."* That was 25 years ago, yet the Bureau of Public Roads subsequently approved specifications for thousands of miles of pavement, where obviously the subgrade should have been so reinforced but was not. It remained for a recent crop of researchers to emphasize the same point, by demonstration with complicated mathematical formulas, which don't mean anything more, but do succeed in making the need and function of a ballast course under pavements more obscure.

TWENTY-SIX YEARS AGO: A column with this heading was started in the March issue, and if enough readers are interested we can keep it going, but to my mind such notes and comments as are given here may prove more interesting and helpful, than attempting to date these squibs 26 years back to the month. Suggestions and comments from readers will be welcome. We all wish to use my services to the best advantage of this journal and its clientele, and readers can be helpful with their suggestions.

Nathan C. Rockwood

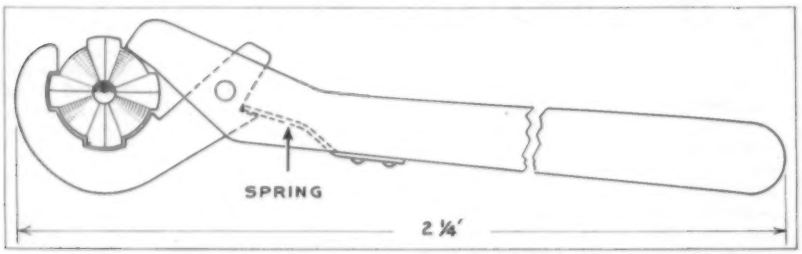
HINTS *and* HELPS

Practical Ideas Developed by Operating Men

Wrench for Rock Bits

By EARL PLUMMER

IN THE ACCOMPANYING SKETCH is shown a special wrench developed by Courtney & Plummer, Neenah, Wis., for rock bits used in their drilling operations. Ordinarily a hammer and punch is used which is dangerous due to the possibility of fragments flying off from the bit and striking the eyes. A pipe wrench could be used, but they are not practicable because they would soon ruin the jaws as the bits are of tough, hard steel. The wrench, shown in the sketch, fits snugly into the slots between the blades of the bit. The handle should be about 2 ft. long.



Wrench designed for loosening rock drilling bits

Solve Blasting Problem

A SOUTHERN QUARRY had a 20-ft. ledge of material in which the strata are exceedingly variable. The formation had about one foot of hard shale, followed by a variable 4 to 10 ft. of rock. Next was a ledge of shale that varied from one to 9 ft. thick, followed by another ledge of rock and other ledges of shale. It was obvious that on such undulating ground as was presented by removing the top ledge of rock, no headway could be made by ordinary equipment. Since the ledges underneath this 20-ft. ledge were 96 ft. of solid limestone, it was very well worth while to remove the 20-ft. ledge, saving as much of the rock as possible.

Shooting this ledge involved the problem of breaking the shale loose and breaking the rock fine enough to be easily handled, without too many fine pieces going out with the shale to the waste dump. The final solution was achieved only after considerable experimentation.

Holes were drilled 6 ft. apart in a single line 6 ft. back of the face, the number depending on the length of shot desired. An Ingersoll-Rand S-49 Jackhammer, using one inch hexagon steel and three-foot bit changes was used for this work. In the first ledge of rock, center-hole bits were used, but in the succeeding ledges side-hole bits were necessary.

From four to six pounds of 1¼- x 8-in. Hercules Gelamite "2" was loaded loosely in the bottom of the holes, with a 24-ft. electric exploder in the middle. Stemming was then built up to the center of the topmost block of rock, and about two to four pounds of dynamite were placed there with an 8-ft. electric exploder. The holes were then stemmed as usual, connected in series and shot 25 at a time with a battery. The results were surprisingly good. The shot illustrated gave nine tons of solid material displaced for each pound of dynamite. The secret of this remarkable result was the series of thin shale and rock ledges at the bottom, which were shot out from under the rock. The double charge of explosives with stemming between prevented the explosion from blowing out through the center ledge of shale. This system was worked out with high strength dynamite, but it is entirely possible that low strength dynamite might have given even better results. Possibly the most essential part of the entire operation was cleaning up to a perfectly square face before shooting a second shot.

How to Babbitt Without a Mandrel

By W. F. SCHAPHORST

THIS WRITER once ridiculed the idea of using a special mandrel for babbitting bearings, and in most instances where it is a rebabbitting job, he is still against the use of a mandrel because in his experience he has never had a failure by using the shaft itself as a mandrel, pouring the babbitt directly around the shaft. Obviously, if the shaft is worn slightly it will be difficult indeed to find a mandrel that will exactly match it. For new work, of course, a mandrel is all right.

The best way to do the babbitting job is to pour the babbitt quickly. Take all the time desired for prepar the moulds, and fashion them in such a way that the babbitt can be poured almost instantly. By pouring quickly, all sides of the shaft are heated simultaneously and expansion is the same all over.

The possibility of danger that must be foreseen and overcome is the warping tendency. Warping will occur when the babbitt is poured slowly and on one spot on the shaft. That spot



Method of blasting variable strata produces nine tons of solid material for each pound of dynamite

becomes highly heated, expands, and springs the shaft in such a way that the hot spot will be on the convex side. Before the shaft can spring back, the babbitt solidifies and holds the shaft in its bent condition. Sometimes this bend is slight, so slight that the shaft can be turned anyway, due to the clearance allowed, but the bend can usually be "felt" with the hand, because in one position the shaft turns more easily than in any other.

In preparing the shaft for the mould it is a good plan to burn some oily waste and create an oily soot all around the shaft. This soot serves a double purpose; it provides or tends to provide the necessary clearance, and it is a good insulator against heat. If the soot isn't thick enough, wrap some thin tough paper around the shaft, pulling both ends together and making it perfectly smooth. This will give you a "double insulator." Let the ends of the paper overlap one-half to one inch and paste the ends together allowing sufficient time to dry so that there will be no moisture in the bearing. Or, instead of pasting the ends of the paper together it may be held in place with a string wrapped around the outside. The string will then form "oil grooves" in the finished bearing. Don't use thick paper because thick paper will usually create too much clearance.

This method will give you a nice, smooth, babbitted job and but little if any scraping will be required.

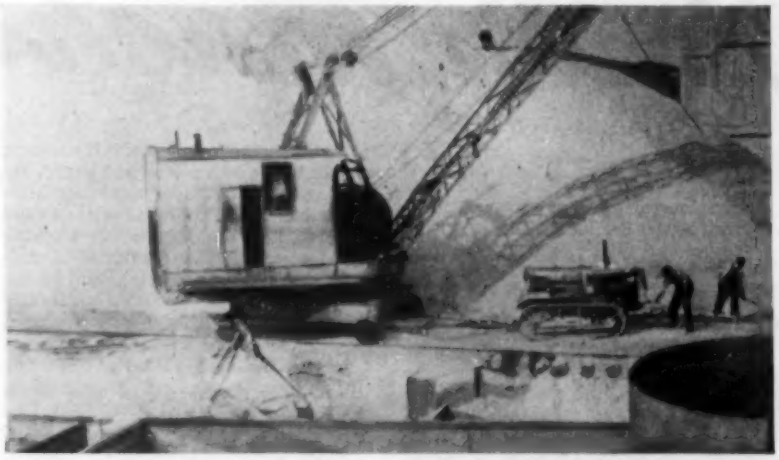
Rack for Screens

WHEN an aggregates plant uses vibrating screens for sizing, it is desirable to have a convenient means of storing extra screen surfaces so that a change can be quickly made without delay in searching for the required replacement. This is particularly necessary when the screens are changed frequently to produce a variety of sizes of material.

One of the easiest means of keeping screens always in readiness is to build a rack at some convenient place in the plant adjacent to the vibrators. The rack consists of pieces of strap iron 2 in. wide and 15 in. long riveted to the structural steel of the plant itself so that they project out at right angles to the wall about 30 in. from the ground and 18-in. apart. The screens are leaned against these projecting arms, each holding one size screen.

Rail-Mounted Dragline

A SOUTHERN sand and gravel producer uses a rail-mounted dragline for stockpiling purposes in a stockpiling area paralleling a railroad line. As shown in the illustration, the dragline is moved over the track from one point to another by a crawler-type tractor. This simple but efficient arrangement has worked out very satisfactorily for this company.



Dragline used for stockpiling is mounted on a truck and is moved by the tractor into the required position for efficient operation

Substitute Engine Radiator

By CHAS. LABBE

On a trip to Northern Mexico, I met with an odd but simply made gas engine radiator.

It was built of several sections, each one made of a sheet of No. 26 galvanized iron simply folded over, riveted and soldered at the ends.

For the water capacity and circulation, spreaders about 2 in. thick were placed between the two sides and also between each cooling unit, the whole being held together by long through bolts.

On the lower corner, a 1½-in. pipe flange was bolted to connect with one water pipe of the engine cylinder, with the inside distance pieces in this place, drilled through the sides for circulation.

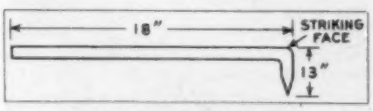
The opposite side for the upper pipe connection of the incoming hot water, was a duplicate of the lower connection.

The units, one for each 5-hp. of the engine, acted as a substantial cooling tank or radiator for gas engine cooling.

Chisel for Close-in Work

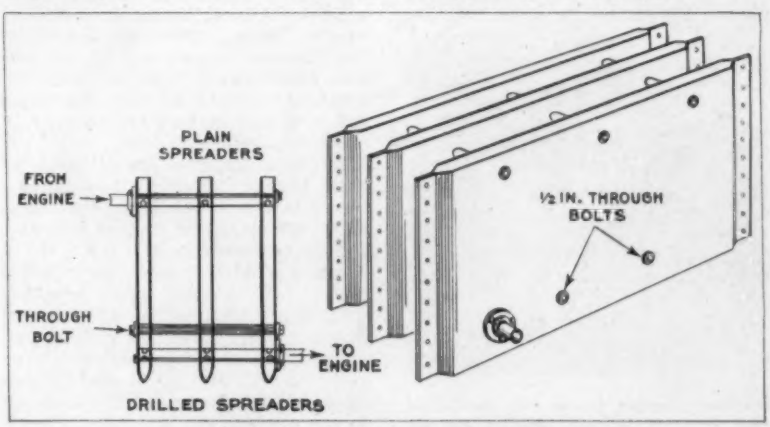
By PERRY E. GORBY

IN THE ACCOMPANYING ILLUSTRATION is shown a very simple cold cut chisel for use in close or confined work where a man is in danger of the hammer head glancing off the object and striking the worker's hand when using an ordinary chisel.



Safety chisel for close-in work

The chisel was developed particularly for use in making bucket elevator repairs especially when replacing a worn link where the old bolts have to be cut off. Before this chisel was made, it was rather hard on a man's hands if the hammer head struck the elevator. Now a man can hammer as hard as he wants to without danger of injury.

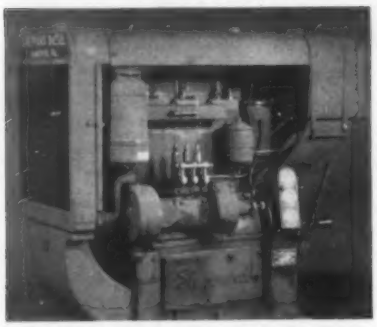


Construction details of gas engine radiator

NEW Machinery

Compact Diesel

R. H. SHEPPARD Co., Hanover, Penn., is manufacturing a compact Diesel engine, Model 6A, which has a rating of 25 hp. at 1200 r.p.m., continuous



Diesel power unit suitable for marine or stationary operation

full load. It is a 3-cylinder unit, with 4 x 5-in. bore and stroke, having 4 cycle turbulance chamber compression ignition. Fuel consumption at full load is claimed to be not more than .50 lb. per b.h.p.hr. Fuel tank capacity is 15½ gal. A 24-volt electric starting system is used. Starting motor and generator are mounted on the side of the block.

End-Tension Deck for Vibrating Screens

ALLIS-CHALMERS MANUFACTURING Co., Milwaukee, Wis., has employed a new tensioning principle in the design of the End-Tension Deck now made available on low-head, Aero-Vibe, and Ripl-Flo vibrating screens. It is said that the deck can be used for wet and dry screening, washing and dewatering processes.

It is claimed that this deck eliminates transverse arching of the screen surface, as with transverse single and double-crowned decks. By employing a series of longitudinally-tensioned, transversely-flat screen surfaces, the End Tension Deck maintains even depth of material. A distributing plate at the feed end of the screen distributes material uniformly over the entire width of the screen to reduce surface wear. The screen is tensioned by clamp bars at the ends of the screen and by intermediate adjustable bars when more than two screen sections are used.



Low-head vibrating screen with end-tension deck developed for wet screening and dewatering

Sections of the deck may be turned end for end and upside down for longer life. Transverse supporting bars on the underside of the deck are covered with molded rubber strips, and act as individual drip strips to assist in more efficient draining of the material in washing and dewatering processes. The feed end of each section can be furnished with a blank surface designed to obtain a pool-washing effect for scrubbing and scouring the material.

Vulcanizing Synthetic Rubber

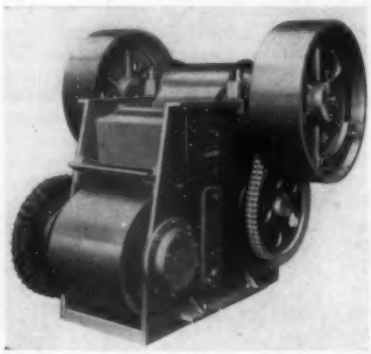
THE B. F. GOODRICH Co., Akron, Ohio, has announced that belting made with the new synthetic rubber from government plants, known as GR-S synthetic rubber can be joined to natural rubber belting with a vulcanized splice. This makes it possible to use sections of the new synthetic belting to repair existing belting when needed. The company's standard splicing and repair materials can be used with the new GR-S synthetic belting, using the same directions given in the B. F. Goodrich manual on repairing and splicing belting.

Combine Jaw-Roll Crusher

DIAMOND IRON WORKS, INC., Minneapolis, Minn., has announced its Dual-Action crusher which combines the functions of the jaw and roll crushers into one machine, providing primary and secondary crushing in one operation.

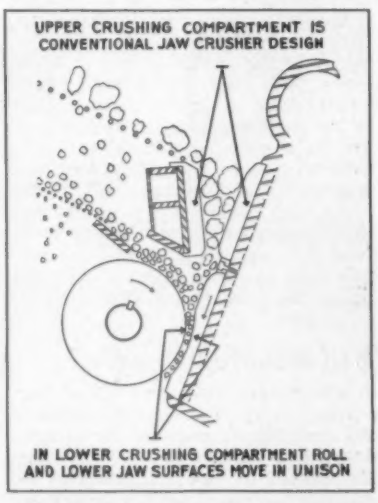
Many advantages are claimed for this unique crusher development. There is a material saving in weight as the Dual-Action crusher, combining the performance of a jaw and roll crusher, weighs about 6 tons as compared with a jaw type weighing around 5½ tons and a roll weighing about 6 tons. The new crusher occupies about the same space as a large jaw crusher, and it is said to use about half the horse-power consumed by the average jaw and roll crushers. It is claimed that it will usually out-produce any combination of jaw and roll crushers of comparative size without plugging, and without flats or slivers.

This new crushing unit is said to be particularly adaptable for the portable crushing and screening plant. In addition to the reduction in weight, space and horsepower, this combination crusher makes possible a plant which is shorter and lower and weighs much less.



Combining principles of both jaw and roll crushers

The crusher comes in two sizes: 10- x 20- x 26-in. jaw and roll and 10- x 36- x30-in. jaw and roll. The smaller unit has a capacity of 23 to 29 tons per hour crushing to ¾-in.; 25 to 30 tons per hour to 1-in.; 30 to 35 tons per hour to 1½ in., and 60 to 80 tons per hour for 2-in., 100 percent crushing. Capacity of the larger unit is 35 to 40 tons per hour to ¾-in.; 37 to 45 tons per hour to 1-in.; 45 to 53 tons per hour to



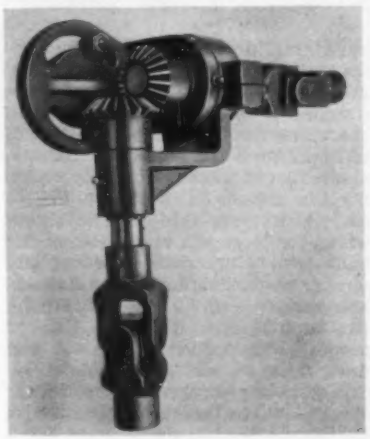
Sketch showing how combination jaw and crusher functions

1½-in., and 60 to 80 tons per hour to 2-in. The maximum jaw opening of the 10- x 20- 26-in. crusher is 3-in.; the 10- x 36- x 36- x 30-in. jaw opening is 3½-in.

Universal Angle Drive

PAYNE DEAN & Co., Laconia, N. H., has developed an unusual universal angle drive which may have a number of applications in the rock products industries.

The Dean angle drive has a flexible shaft mounting. Gears have their shafts placed at 90 deg., but one shaft is mounted in a swinging bracket bearing that rotates on the outer bearing surface of the other bracket, through a 200-deg. angle, and with special construction may rotate through the full 360 deg. circle. This movable bracket has a large bearing surface and is provided with a split clamp, tightened by a ½-in. round head socket set screw. The movable



Angle drive with one shaft fixed in a horizontal position and the other pointing vertically

bracket may be locked in any position through the 200 deg. range and held rigidly against operating strain. The base is provided with two circular slots allowing a further movement of approximately 90 deg., and when the drive is provided with two universal joints, almost any angle of operation may be obtained.

All-Welded Clamshell

THE C. S. JOHNSON CO., Champaign, Ill., has announced an all-welded clamshell bucket. Several advantages are claimed for this bucket. It has a renewable manganese steel lip giving long wear, and the closing sheaves are equipped with needle bearings which are protected against dirt and moisture by a special synthetic rubber seal. To prolong rope life, sheaves are of large diameter and guide sheaves have been substituted for guide rollers. All-welded construction is said to make digging



Clamshell bucket of all-welded design

easier and faster for there are no external bolt heads or rivets to slow up the operation.

Subject to government authorization, all-welded buckets are available in the following sizes: general purpose ½ to 2½ cu. yd.; rehandling buckets, ½ to 2½ cu. yd.; and heavy digging, from ½ to 1½-cu. yd. capacities.

Truck Lift

THE FRANK G. HOUGH CO., Libertyville, Ill., has brought out a truck-lift attachment for mounting on a Case "DI" industrial tractor. This lifting unit is equipped with a platform 26- x 46-in., for handling bulk materials in boxes, packing cases, etc. It performs many of the functions of a shop crane, and has a capacity sufficient to raise a weight of a ton or more from 5½ in. off floor level to a maximum height of 6 ft. 10 in. in ten seconds. The truck-lift also has been used for maintenance work as an elevator for the repair or installation of overhead shafting or motors. It can be stopped and held to the exact working height required.

D-C Arc Welder

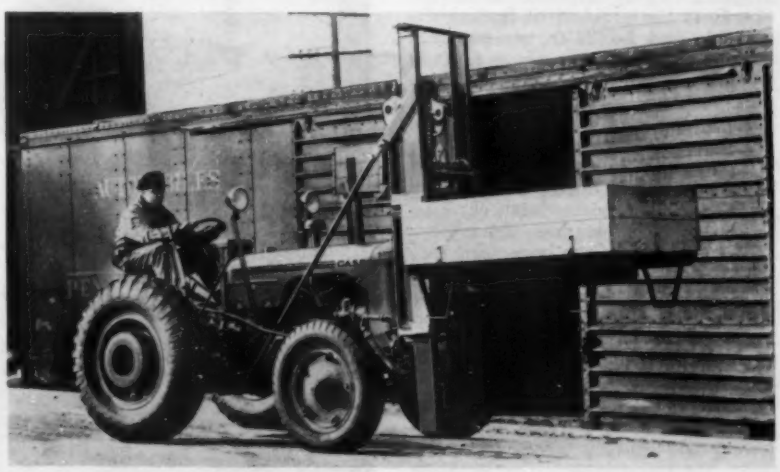
GENERAL ELECTRIC CO., Schenectady, N. Y., has improved its line of direct-current, single-operator arc welders, Type WD-30 series. These welders are now equipped with two new control dials and a re-designed driving motor. The control dials permit the welding current to be preset without the aid of a volt-ammeter, and the driving motor is designed to give resistance to the weather when the machine is operated outdoors.

One of the control dials is calibrated in terms of electrode size. The operator simply sets this dial to correspond to the size of the electrode being used. The other dial indicates the range of welding current avail-

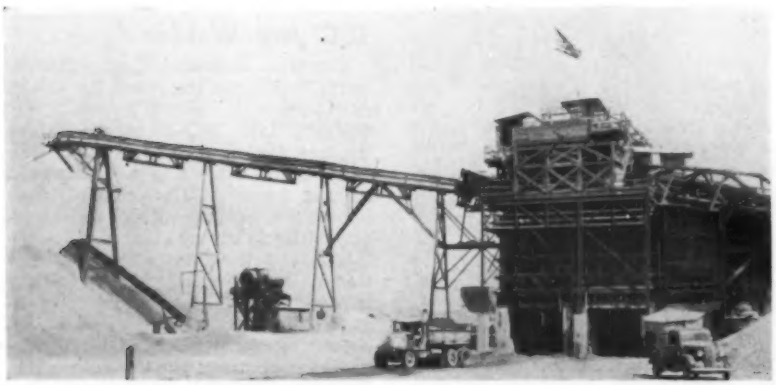


Single-operator, portable motor-generator direct-current arc welder

able for use under these conditions. The operator presets the welding current merely by rotating a pointer to whatever amperage he wishes to use. These improvements are all designed to eliminate operator fatigue.



Truck lift used for loading railroad freight cars



Aggregates bunkers at Roscoe plant, showing loaded truck pulling out and stockpiling conveyor

By JIM MEDFORD

Consolidated Rock Products Co., Los Angeles, Calif., makes efficient use of available power units to keep operating costs at a low level

Smooth Production Flow Cuts Costs

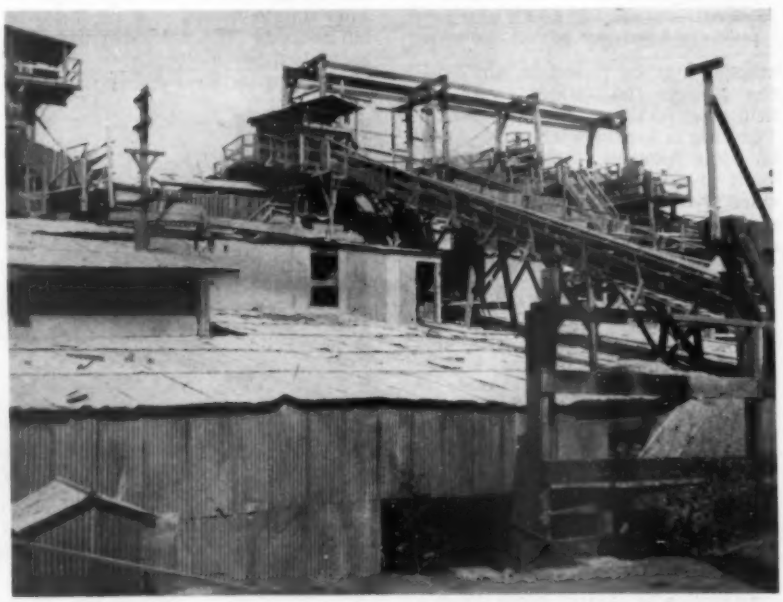
TO GET THE MOST PRODUCTION at the lowest cost-per-ton, the Consolidated Rock Products Co., Los Angeles, California, has given considerable study to the power requirements in its Roscoe Plant, the Big Tujunga Basin unit of the San Fernando Valley, one of the company's largest plants. By this coordination of equipment prime movers, Consolidated has maintained its high standard while at the same time holding down operating costs. Although present wartime restrictions have made it necessary to operate electric motors, gasoline, steam and Diesel engines, some of these power units may be replaced with more efficient Diesel engines after the war. (See ROCK PRODUCTS, November, 1939, p. 27).

Competitive production and distribution methods within the sand and gravel industry, together with market pressure, have imposed upon the operators the problem of finding the variable cost factor in the business, then doing something about it. It is the old question of producing acceptable material at reduced cost.

Here in this highly competitive field, materials must of necessity be laid down on the job at diminishing prices in order to adjust construction costs to the ever-rising labor expense. In similar circumstances, it has been found that one of the important factors entering into overall production cost that is variable and controllable within certain limits is that of power. So, powering of driving units for the most in flexibility is essential to cost reduction.

The Roscoe plant is in production at the rate of 500 tons per hour at a base production cost that the company has not released. Coordination of equipment and power types economically move the material 2140 ft. from where the 5-cu. yd. 120B Bucyrus-Erie electric shovel dumps the pit-run into the giant 30- x 42-in. Kennedy jaw crusher, set for a clearance of 6 in., and powered with a 100-hp. Westinghouse motor. Material from this primary crusher moves over a series of five conveyors for discharge at an elevation of 140 ft. to the rotary scalping screen in the main plant.

A Northwest Murphy-Diesel-powered dragline with an 80-ft. boom is spotted about 15 ft. back of the brow of the 100-ft. pit. Instead of a dragline bucket, a heavy flat steel frame studded with husky spikes is drawn across the pit face to tear down the bank thus protecting the shovel below from being buried by slides. The material is firmly packed and the dragline is operated back and forth along the rim in a manner sufficient to maintain a full supply of material at the foot of the bank thereby avoiding the menace of overhang. The 5-cu. yd. Bucyrus-Erie electric shovel works the loose pile at the foot of the bank with a minimum of effort and scraper wear. This combination shovel and dragline effort mixes the bank run and insures a steady flow of properly proportioned coarse and fines. Boulders are a negligible quantity above the size the primary crusher can handle. In case of electric shovel



Final section of belt conveyor from pit to screening plant and bin storage

breakdown, a standby steam rig is kept nearby to immediately take over as soon as steamed up. This is vital in keeping plant supplied with raw material.

The primary feeder and the crusher complete is mounted on a railroad car on standard railway track, the first of two known so mounted. Rail sections are 40 ft. each, and moves of this distance are made by laying a section of track ahead of the crusher and adding a section of conveyor behind.

Conveyor System

From the primary crusher material is dumped onto a 42-in. conveyor belt that discharges onto a second conveyor which equalizes the flow to No. 3 conveyor. This unit discharges onto the 15,000-ton surge or stockpile, sufficient for three days' operation in case of shovel or jaw crusher failure. Beneath the surge pile there is a 190-ft. reinforced concrete tunnel. Material is fed through the Jeffrey electric vibrating feeder located in the tunnel to No. 4 conveyor that discharges through a junction box to No. 5 conveyor, making delivery to the rotary scalping screen at the mill. All conveyors are powered with electric motors. No. 1 conveyor at the electric shovel has a 50-hp. electric motor; No. 2 conveyor has a 40-hp. electric motor; No. 3 or stacker conveyor has a 150-hp. motor; No. 4 in the surge tunnel has a 100-hp. motor; and No. 5 conveyor, delivering to the plant, has a 75-hp. motor.

Entering the plant, the material passes through the scalping screen and the various sizes passed are picked up by other motor-driven conveyors and carried to other sizing screens. The oversize from this screen is delivered to an Allis-Chalmers 28-x 36-in. jaw crusher, and a 7-ft. Symons cone crusher for final crushing. The jaw crusher is driven by a 100-hp. Fairbanks-Morse motor and the cone by a Westinghouse motor of 200-hp.

Since the crushed rock is clean, there is no washing and it moves onto 16-ft. Symons grading screens via a conveyor. The recrushing is done by a pair of 4-ft. Symons cone crushers driven by 75-hp. Fairbanks-Morse motors. These cones crush the oversize from the sizing screens and discharge onto a conveyor and thence back to the vibrating sizing screens. The sized aggregate is chuted to separate storage bins within the plant to await loading into trucks or railroad cars.

Small rock, fine gravel, and sand passes through the rotary screen and is cleaned thoroughly before being stored. Conveyors dump this material into a No. 9 Stephens-Adamson 24-ft. revolving trommel screen. The separated sand gravitates to the sand washers. After laundering, a sand drag removes the sand and a conveyor discharges the sand into bins, the surplus going to open outside storage over a 200-ft. loading tunnel beneath.



Looking down into sand and gravel pit, showing track-mounted primary crusher and electric loading shovel, in the center. Above may be seen dragline with cable attached to a heavy plank frame studded with spikes which is drawn across pit face to prevent overhang of material

Old Aqueduct Tunnel Forms for Conveyor Tunnel

This tunnel is unique because it is built out of an 18-ft. diameter by 200-ft. length steel forms reclaimed after the construction of the Los Angeles Metropolitan Water District aqueduct. Trucks are driven through the tube, taking sand through gate openings in the ceiling. Surplus sand that accumulates around the tube is also loaded into trucks by two P and H truck clams and one Browning steam clam.

The gravel from the trommel passes to a 16-ft. Symons vibrating screen where laundering is done by jets of high pressure water. The gravel, now a clean aggregate, passes on to storage bins.

Batch Direct to Trucks from Screening Plant

Secondary handling expense is kept to a minimum at this plant by batching the aggregate direct from the screening plant, avoiding the expense of stockpiling as much as possible where conditions permit. This insures delivery of clean, graded sizes. Drainage of excess water from the sand is generally completed by the end of 24 hours, leaving the balance of the moisture content a constant percentage that can be depended upon.

Considerable aggregate is normally shipped by rail, amounting to 70 and 80 cars daily. A railway spur connects the plant's loading sidings with the main line and three 25-ton Plymouth gasoline locomotives are used for loading cars, spotting and delivery of material to the load tracks. Cars are filled direct from plant storage bins. This is quicker and cheaper, but when necessary to load from yard stockpiles, a Browning steam crane is put into operation. Here flexibility again counts. No power failure to hold up shipments.

To load trucks from stockpiles, adjacent bins or hoppers are conveniently located so they can be charged from stockpiles by either one of the two yard cranes. Trucks are spotted under the charged hoppers the same as taking on a load at plant bins. This system has been found more eco-

(Continued on page 66)

Lime

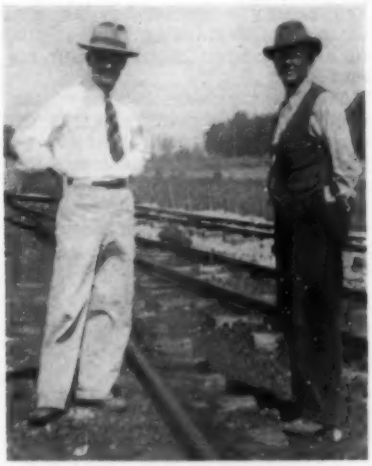
From Wood to Gas Kilns

Batesville White Lime Co., changes over vertical kilns from wood natural gas fuel and converts firing to center-burner system

By WALTER B. LENHART

When the first plant of the Batesville White Lime Co. was built about 1924, it was a small operation. In 1926 it started an enlargement program including the installation of a Kreitzer hydrating plant. This plant continued to function as a wood burning operation until last year when it changed over to the use of natural gas. The plant produces high calcium lime. It was said that further expansion of aluminum production in Arkansas was being held up somewhat, due to the shortage of lime. However, this is being corrected as some of the aluminum ore processors will burn their own lime.

Victor J. Azbe, who is well known in the lime industry, was retained as consulting engineer and he immediately changed one of the kilns over to gas, using a burning system that he invented and patented. This system is referred to as the "Center Burning System." In this system the gas is carried into the center of the kiln through a series of channels that are parallel to the long axis of the kilns. There are many lateral gas openings or ports in these channels and the flame produced projects over to the walls of the kiln.



To the left: L. E. Smith, manager, and to the right, H. C. Martin, superintendent of the lime plant at Batesville, Ark.



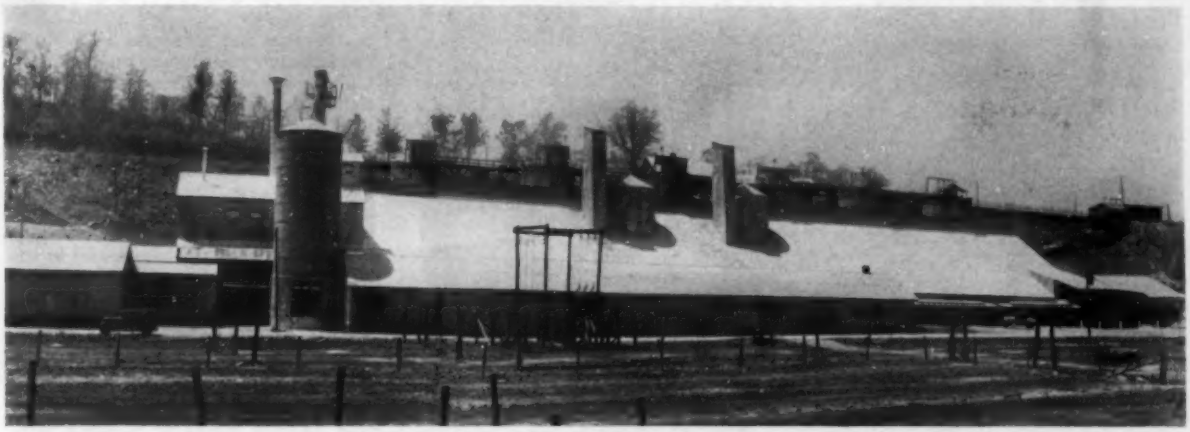


Above: Looking down along row of six vertical lime kilns. Below: Close-up of kiln showing center-burner installation

The gas ducts are carried above the flow or outlet of the kiln so that the lime below them can be considered in the cooling zone. This gives an increase in fuel efficiency, it is said. About 90 percent of the gas used is burned in this center burning zone. There are several side burners spaced around the periphery of each kiln but the gas valve on these burners is just "cracked" so little gas is burned there. The outer burners are intended only to keep the outside walls hot, and an effort is being made to do away with them entirely as they are a nuisance and tend to burn out to the side walls.

The six kilns were originally 36 ft. high but recently they have been extended to 40 ft. Five of the kilns are 6- x 10-ft. inside dimensions and the sixth is 7- x 13-ft. This makes it one of the largest kilns in the South. The latter kiln was the first kiln that Mr. Azbe changed over to his design. This alteration involved considerable remodeling of the entire kiln but the change was well worth while for this kiln now has a capacity of 100 tons per 24 hours, making it the highest capacity vertical kiln in the country. The other five kilns simply installed the center burners at, or near the bottom of the kiln without any further changes other than installing an induced draft fan on each kiln. These five kilns each have a capacity of 65 tons per day.

With wood, the kilns had a capacity of 20 tons per 24 hours. With gas and a crude form of center burner demanding that most of the gas be burned from side burners, production rose to 35 tons, but with a fully developed center burner and induced



Panoramic view of Batesville White Lime Co. plant. Kiln stacks and track may be seen above the roof

draft production rose to 65 tons per kiln in 24 hours. It is obvious that during these times when lime is needed badly that the changeover was an important one.

Paper mills in the southern States are large users of burned lime. A considerable portion of the lime sent to a paper mill finds its way into the streams and bayous and is a waste product. Recently the Fish and Game Commissions of Louisiana have clamped down on this practice. Paper manufacturers now plan on recovering this waste product, drying it and recalcining. This will cause some decrease in lime shipped to such users.

Gas is piped to the plant seven miles from Batesville in a 6-in. line. The company paid for this installation but after a certain amount of gas is used a refunding rate becomes effective. At each kiln a 4-in. header tapers off from the main line, with ¾-in. pipe lines serving each burner. Gas is delivered to the kilns at 10- to 13-lb. pressure.

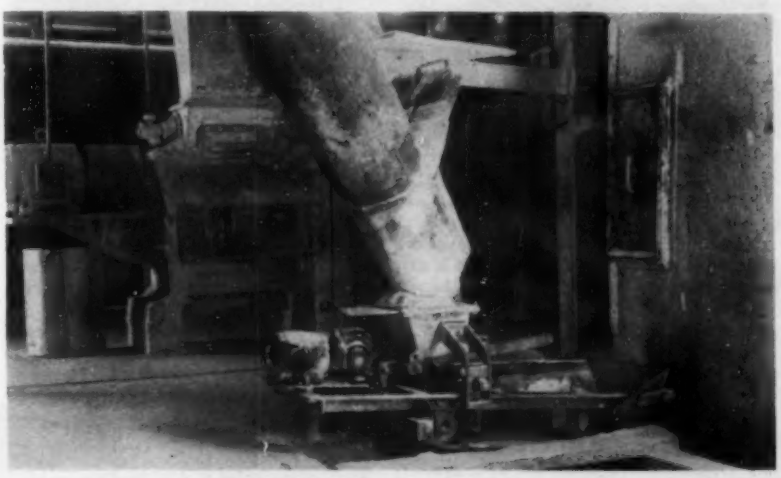
When loading the kilns with stone, the draft fan is stopped. During this time the consumption of gas will be 6000 to 7000 cu. ft. per hr. With the fan on, the consumption is from 16,000 to 20,000 cu. ft. per hr. The more gas burned the more lime produced.

Between each kiln is a Brown twin recording pyrometer. One pyrometer serves two kilns with the hot point junction located at the fan's suction. Operating temperatures at this point are in the 350 deg. F. range. If the temperature should rise to a maximum allowable of 700 deg. F. the charging door must be opened to reduce the draft and temperature. Merriam indicating gas meters give the operator a line on the gas being used.

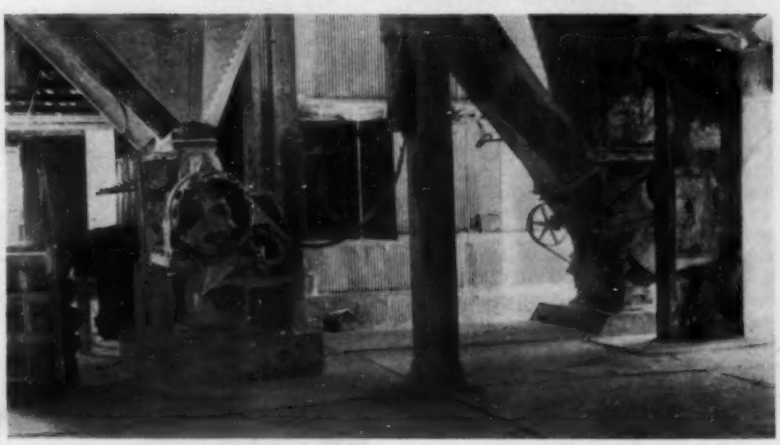
The gas fired kilns are so designed and built that should gas delivery fail for any reason, they can be changed over to coal burners within 30 min. The grates, ash pit, etc., are all installed and should it be necessary to burn coal all that is needed is to remove about 50 brick and start the coal burning.

The management of the Batesville White Lime Co. is quite sold on the advantages of the Azbe system of gas burning and plans on changing the remaining five kilns over to the design of the larger kiln.

It is anticipated that when the quarry and crushing improvements and the modernized lime handling system have been installed, the total capacity of the plant will be about 400 tons of lime as compared with the original capacity of 120 tons daily. According to Mr. Azbe the



Constant-weight feeder delivering burned lime to hydrator



Packing machines to the left, and hammer pulverizer to the right





Above: Looking toward one end of the six-kiln lime plant. Below: Loading lime out for bulk shipment in special railroad freight cars

plant will have not only the largest capacity in the South but will lead in the country as a whole. All of these improvements will be accomplished through a relatively low investment, taking advantage of favorable natural conditions.

Big Dragline for Phosphate

INTERNATIONAL MINERALS & CHEMICAL CORPORATION, Chicago, Ill., plans to substantially increase production of phosphate in its Florida operations at Peace Valley, Florida.

An 1150-B Bucyrus-Erie walking dragline costing $550,000 has been purchased for operation at the Peace Valley mine, according to Franklin Farley, vice-president of the corporation. This very large dragline has the following specifications: working weight, 2,300,000 lbs.; 215-ft. boom which will carry 25 cu. yd. at 180 ft., or 14 cu. yd. at 250 ft.; 20 cu- yd. bucket; 80-ft. dumping height; 217-ft. dumping reach; 220-ft. digging reach, and 130-ft. digging depth; walking shoes are 8- x 48-ft. Electrical equipment includes: two motor-generator sets, one 500 hp. induction driving motor; the other 1250 hp. synchronous driving motor. All functions of machine are independently operated by more than 30 electric motors including: two hoist motors, each 425 hp.; two drag motors, each 425 hp.; three swing units, each having a 125 hp. motor. Due to the shortage of scrap iron for ballast on the dragline, the ballast compartments are made large enough to use 250,000 lbs. of sand and gravel.



Close-up of 5-cu. yd. electric shovel dumping to crusher that feeds track-mounted grizzly

International Minerals & Chemical Corporation has been operating in the Florida and Tennessee phosphate fields for more than 35 years and is said to be the largest producer in the country. It is currently planning operation in 1944 of other phosphate properties recently acquired in Montana. For many years, it has pioneered technical improvements both in the mining of phosphate and in the oil flotation processes employed in the industry.

Seek to Enjoin Pit

JANESVILLE SAND AND GRAVEL CO., Janesville, Wis., recently met with some opposition to its plan to excavate on new property recently purchased. The petition for extension of operations will have to be taken before the City Planning Commission.

Stockpiling

(Continued from page 63)

nomical and faster than loading direct into trucks. Bins are charged when the clams are not loading direct into trucks, loading or unloading railroad cars, etc.

The production manager of the Consolidated Rock Products Co. is R. C. Griffin. The superintendent of their Roscoe Plant is Walter J. Schienle and the mill foreman is O. C. Vick with a service record of 16 years at this one plant.

The other plants operated by the company are the No. 1 Alameda plant, Los Angeles, No. 6 Irwindale plant near Azusa, No. 10 Largo plant near Azusa, No. 11 Claremont plant near Claremont, No. 12 Chapman plant near Orange, No. 14 Orange County plant near Orange, No. 19 Sierra plant near Monrovia, and No. 22 Roscoe plant mentioned in detail.

Cut Agstone Hauls to Farm

Minnesota and Wisconsin producers of agricultural limestone use portable plants to reduce quarry-to-farm hauls

By BROR NORDBERG

MUCH EMPHASIS already has been placed on the production and distribution of agricultural limestone in the central states in former agricultural limestone issues of ROCK PRODUCTS. This spring, we have travelled into Minnesota and into Wisconsin counties adjoining the Twin Cities and we find operating methods quite different than those in other parts of the country.

Use Portable Plants

Bulk of the production in Minnesota and in the Wisconsin area covered is by means of portable plants, and the producers are doing an excellent job in meeting the demands for liming materials. Most of this discussion is concerned with southeastern Minnesota since only one operation was visited in Wisconsin.

Southeastern Minnesota, from the Twin Cities south, is one of America's outstanding dairy sections and the principal job to be done by agricultural limestone producers is to furnish sufficient liming materials to keep hay and alfalfa production at a high level. The farms, which probably average 160 acres and 20 milk cows each, are generally in need of much liming materials.

The State has a large number of small quarries with suitable stone deposits scattered over the area where liming materials are most needed. At the present time, agricultural limestone is being spread on farms in 19 southeastern counties. An estimated 250,000 to 300,000 tons will be delivered in 1944, which is about one-third greater than in 1942. Probably ten percent of the tonnage will be for cash to farmers outside the A.A.A. program and those desiring tonnage exceeding their allotment. All deliveries into these counties are made by trucks direct from the producing plants to the farms at a delivered price. With few exceptions, the spreading is up to the farmer.

There are eleven bona-fide producers in the area, of which only three are producers of commercial stone from stationary plants. These plants ship a relatively small tonnage of agstone by rail into some of the northern counties.

Phosphates in the West

The southwestern part of the State is not being limed, since, relatively speaking, there is little need for it. Counties along the western boundary are being supplied phosphates whenever they are available. There are marl deposits in several counties just northwest of Minneapolis and marl is being produced for application to the soil in seven adjacent counties. Agricultural gypsum is being shipped in from Fort Dodge, Iowa, for application to the soils in nine north central counties. Approximately 200 lb. of this material is being spread to the acre. Paper mill refuse lime is utilized in one county.

Contracts for agricultural limestone are on the source-of-supply basis with the exception of two which are on the definite-quantity basis. These two types of contracts, which have been put into effect by



All operations provide for gravity flow of material at plant of E. E. Haapala, Zumbrota, Minn. Truck from quarry dumping into bin with apron feeder to jaw crusher. Product is conveyed to screen and pulverizer unit, below to the right



Looking up at various stages of portable plant. At bottom agricultural limestone is being loaded out into truck for direct farm delivery. Conveyor filling bin is from pulverizers. Quarry is on high level

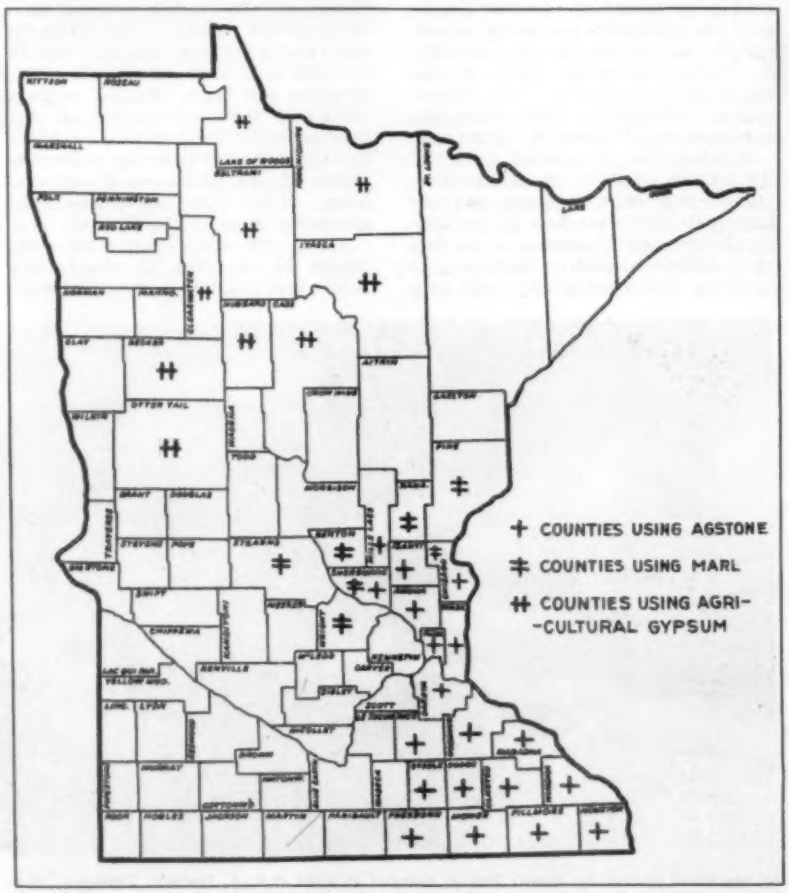
A.A.A. nationally, are described elsewhere in this issue. Definite quantity contracts are in effect in Wisconsin.

Farmers Do Most of the Spreading

Minnesota prices average $1.93 per ton delivered to the farms and the job of spreading is passed on to the farmers. The farmers are willing to pay 50 or 75 cents per ton for spreading but some of the producers, with spreading equipment, are not encouraging the practice in order to conserve their trucks and to utilize them for moving the highest possible tonnage. Shortage of truck drivers is the chief bottleneck, so some of the producers can ill afford to render the spreading service to farmers under present conditions. The chief concern of the producer is to keep his plant running to capacity and make barnyard deliveries, since the demand is sufficient to take all the tonnage (and more) he can produce. Farmers also are short-handed and would undoubtedly take more tonnage if they had the manpower to spread the materials on the fields.

There are pros and cons for both types of contracts, some of which are discussed in an accompanying article. Definite contracts have the advantage, to the producer, of enabling him to stockpile the finished product since he has a guaranteed tonnage and knows that he will be paid up to 80 percent of the tonnage even if very little of the tonnage is taken. On the other hand, on definite contracts, the tendency on the part of county committees (which secure the orders) might be to make conservative tonnage contracts in order to avoid the penalties of paying for undelivered stone in stockpiles. On definite contracts, when it is obvious that the producer is going to exceed it in tonnage, the practice is for the A.A.A. to make an agreement with the producer, in advance of completion of the contract, to extend it.

Two of the outstanding producers



Map of Minnesota showing the distribution of agricultural limestone, marl, and agricultural gypsum

expressed the opinion they would favor definite contracts that would require a substantial bond to guarantee fulfillment. Their experience has been that small "fly by night" operators have come in and taken contracts at extremely low prices and then have been unable to produce the requirements. The practice, then, is to ask the bona-fide producer if he will assume the unfilled portion of the defunct operator's contract and, being coöperative, he does accept it, usually at the low price originally quoted.

Higher Prices in Hilly Country

Many farms in southeastern Minnesota are located in rolling to hilly country and it is of interest that producers quote higher prices in these hilly townships. The reason for this is the greater wear and tear on trucks and the reduced pay mileage that is obtainable. Rail hauls into northern Minnesota are handled by a contract between the A.A.A. and the dealer. The dealer buys f.o.b. the quarry and bids on a delivered basis to the farms in the area.

Specifications

Agricultural limestone must contain 80 percent $CaCO_3$ equivalent and be pulverized so that 80 percent, including all the finer particles, will pass an 8-mesh sieve. The moisture content at the time of shipment must not exceed eight percent, a limit which apparently is very simple to meet. The specifications for $CaCO_3$ equivalent and percentage through 8-mesh must be above the minimum so that the product of the two percentages will equal or exceed 0.7200.

As a matter of interest we will mention the specifications for marl and gypsum in Minnesota. Marl must be in bulk and on a cubic yard basis. The material must contain a minimum of 70 percent $CaCO_3$ equivalent and furnished "in a condition suitable for spreading."

Gypsum must be furnished in 100-lb. bags. It must contain not less than 18 percent of water soluble sulphur with a maximum of six percent moisture in addition to water of crystallization and not less than 85 percent must pass a 100-mesh sieve.

Reason for Portables

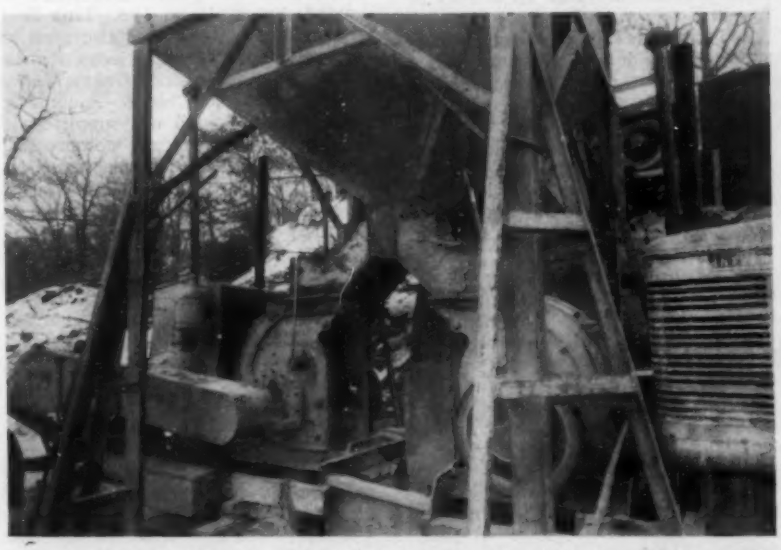
There are several good reasons for operating portable agricultural limestone plants in Minnesota. There is suitable limestone testing over 90 percent $CaCO_3$ all through the 19 counties where agricultural limestone is most needed. There are many quarries that have been opened years ago by other interests to produce dimension stone or county commercial stone, and they are available on a tonnage royalty basis. The nature of the rock formation is such that it is not too costly an operation to open



Truck ramp to the left with control lever for apron feeder to jaw crusher. Second stage is pulverizing followed by loading bin



Looking from bottom to top of plant layout. Note wheel-mounted pulverizer units



Agstone is pulverized at the rate of about 40 tons per hour through the two pulverizers. In the center is a by-pass chute from overhead screen. Each unit is driven by a Diesel engine

a new quarry to get out a few thousand tons of stone.

In fact, the cost of moving a plant to a new location is more than offset by the savings in reducing the length of haul to the farmers. Average length of haul to the farms is generally held down to 12 miles one way which is an important consideration, particularly under today's emergency restrictions. This saving, in truck mileage and maintenance, is reflected in a comparatively low price per ton of agricultural limestone to the farmer which will help to establish the product with some degree of permanence in this territory. Another factor is that the volume of agstone is not sufficient, generally, to justify the establishment of a permanent plant, since on an average 7000 to 12,000 tons is all that will be produced and delivered from one quarry location within the distribution radius of 12 miles established by leading producers.

The bona-fide portable plant producer in Minnesota is well-equipped nevertheless and generally has his own dump trucks and one or more spreader trucks. His plant is necessarily powered by gasoline engines or Diesel engines, and in many cases the various equipment units are wheel-mounted for ready portability. They are prepared to operate under extreme weather conditions; in fact, one producer said he operates down to ten degrees below zero if the temperature is on a rising curve.

Through the A.A.A., contracts are secured early, usually in the Fall preceding a season, so that the producer has sufficient orders on hand to establish his plant. He will set up to serve a certain group of contracts and, when they are filled, he moves his facilities to another quarry. He may make a single move or up to four or five in a season.

In any one location, very little stockpiling is done. Trucks are loaded from bins for direct delivery when drivers are available. One producer (Wisconsin) said that he makes his long hauls on bad operating days. In wet weather, production through hammer mills is reduced and the trucks can therefore be spared for the longer hauls and still keep up with the plant.

In Minnesota, the spreading season ends about May 20 and resumes again in August. Farmers, as a rule, prefer deliveries before seeding their fields, but under present operating conditions, they are obligated to take the material when it is available. However, the progressive producers service the farmers to the best of their ability by starting each season with a different group of farmers. These producers are promoting good will for the future development of their individual businesses and they are rendering service as best they can.

As to production increases, generally the plants have not been increased in capacity through the addition of new major equipment for the current season; but they are kept running and on longer shifts. Production has been increased by some through re-arrangements of machinery, the substitution of V-belt drives for out-moded types, the substitution of pulverizer drives of greater horsepower, etc.

Typical Portable Plant Producer

The plant and operations of E. E. Haapala, Zumbrota, Minn., will serve as an illustration of a well-equipped portable plant producer in Minnesota. Mr. Haapala started producing agricultural limestone in 1940, the year before the Grant-of-Aid-Program began. At that time he had a single hammer mill pulverizer with a capacity of 8½ tons per hour and 20,000 tons annually was his limit. He now has a plant that produces 35 to 40 t.p.h., the actual capacity varying with the particular limestone he is processing.

Mr. Haapala is servicing A.A.A. contracts in 50 townships and has quarries leased in five counties. Production from each location averages around 10,000 tons and continues most of the year around except under extremely severe weather conditions. The quarries contain stone ranging from 91 percent up to 96 percent $CaCO_3$ or more; some of the deposits are stratified and others massive.

His plant, as shown in the illustrations, is a gravity setup except for conveying by belts between production units. In the particular location shown, the quarry is on the level of the receiving hopper and a 2-ton Studebaker stub-nose dump truck delivers to the plant. The truck is loaded by a ½-cu. yd. Link-Belt Speeder shovel, which is also used to remove overburden. The ledge of rock is drilled by a Gardner-Denver jackhammer and a Chicago-Pneumatic jackhammer, which are supplied air by a 210-ft. LeRoi air compressor, gas-driven, mounted on rubber tires.

Stone is dumped into an Iowa steel receiving hopper, and a 30-in. by 8-ft. Iowa apron feeder regulates the flow of stone into a 15- x 24-in. Universal jaw crusher which produces a product of 2½- to 4-in. top size; if the rock is soft, the jaws are opened up to discharge the larger size stone. All this equipment, with an Allis-Chalmers U-40 gasoline power unit, is mounted on a 4-wheel drive truck that is self-propelled for moving between various quarries.

An 18-in. belt conveyor, 33-ft. centers, puts the stone over a 3- x 8-ft. Coyle and Roth double-deck vibrating screen set over a 10-cu. yd. steel bin from which two pulverizers are fed. The top deck, with 1-in. sq. openings, protects the lower deck with ⅜-in. sq. openings. Fines are bypassed the bin onto a belt conveyor which fills the truck-loading bin. All the overs drop into the bin from which there is a split feed into two No. 14 Gilson hammer mills. Each mill is driven through V-belt by a U-D14 International Harvester Diesel engine at 1400 r.p.m. Grate bar openings in these crushers are varied according to the type of stone quarried. The product averages 70 percent through 20-mesh. The truck-loading bin has 25-tons capacity. Nine men are required to operate the plant and seven truck drivers are needed to handle the output for direct delivery to the farms. The operator has three 5-ton dump trucks and two equipped with Baughman spreaders. Additional trucks are hired when they are available. The plant can be dismantled and set up for production at a quarry 60 miles away in one day. The pulverizers are mounted on truck chasses and the bins are readily disassembled.

The plant has been operated practically all winter at the location shown in the illustrations. During extremely cold weather, a 14- x 30-ft. sectional building made from Insulite treated sheathing is set over the pulverizers and their engines. Smaller housing units are put over the other engine drives during cold weather and overnight. According to Mr. Haapala, the practice of covering engines with insulated protection helps considerably in starting gasoline engines and Diesel engines during cold weather.

Contacts Farmers

While local committeemen are responsible for the bulk of the sales under A.A.A., Mr. Haapala considers it important to render service to the farmers and to maintain contact with them. He regularly attends farm meetings and coöperates with the Soil Conservation Service and other agencies in their promotional work. The only advertising done is the publication of announcements in the farm papers and small town weekly papers telling when and for how long agstone will be available.

Plant of E. J. Leary Construction Co.

Across the line from the Twin Cities, near River Falls, Wis., the E. J. Leary Construction Co. expects to produce 200,000 to 250,000 tons in 1944 which is double the 1943 production. This concern also operates a portable plant, and has two quarries, one at Roberts, Wis., in St. Croix county, and the other at Bay City, Wis., in Pierce county. Half of St. Croix county and all of Pierce county are served from the two quarries.

The plant is somewhat similar in arrangement to the Haapala plant,

(Continued on page 84)



Sly Dust Filter in a Connecticut rock crushing plant for the suppression and positive collection of dust created by crushing, screening and conveying operations. The same filter is shown in the entire view of plant below.

IN THE CRUSHED STONE FIELD, TOO SLY DUST COLLECTORS DOMINATE

IN the rock products field, as in the cement field, more Sly Dust Collectors are used than any other make. Such popularity is the result of the greater advantages Sly offers.

Write us fully so that we can give you complete information on your dust problem.

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Why SLY

1. Greater filtering capacity because of more filtering cloth.
2. Taut bags (patented) save power and improve dust removal.
3. Bags more easily replaced.
4. Automatic control (any degree) minimizes or entirely removes the human factor.
5. Simpler shaker mechanism results in savings in maintenance and operation.



Build Limestone Grinding Plant Under War Restrictions

By BROR NORDBERG

Annville Stone Co., Hershey, Penn., constructs entirely new agricultural limestone plant

JUST FOUR MONTHS after the decision was made to produce agricultural limestone for government A.A.A. contracts, the Annville Stone Co. had completed construction of a large capacity pulverizing plant at Hershey, Penn., and gone into production to fill a heavy backlog of contracts.

The plant is a completely-enclosed structure adjoining the company's main crushing plant which produces fluxstone for open hearth steel and blast furnaces and high calcium cement rock for shipment to Lehigh Valley portland cement plants. It will eventually have a production of 500 to 600 tons daily of a product testing 100 percent through a 20-mesh sieve and better than 87 percent passing an 80-mesh sieve. These figures are from a recent analysis. Capacity production will be 45 t.p.h., but two-shift operation is planned.

Obtain Equipment on High Priority

The plant was built under adverse conditions as to the availability of construction materials, labor and equipment, but is completely modern in every respect, has great flexibility and will eventually produce approximately 100 tons of product per man-day with its present equipment. New machinery was secured through high priorities, which were cleared quickly, and in some instances reconditioned used machinery was installed, in order to expedite delivery. Due to the shortages of structural steel and the need for fabrication to special design, the building was constructed almost entirely of lumber even to the use of timber load-bearing trusses supporting the roof. It might be said that the equipment was first secured and the plant structure built to fit the needs of the equipment. Concrete foundations were poured starting December 7, 1943, and the first agricultural limestone was produced on February 28, 1944.

Hershey is located in the Lebanon Valley between Reading, Penn., and Harrisburg, in an area famous for the quality of its limestone. The limestone at the Annville Stone Co. operation is a hard, brittle stone that fractures rather easily. It averages 97 percent $CaCO_3$ or better.

Annville Stone Co. does not produce commercial aggregates and until now has produced crushed stone only for rail delivery to steel mills and Lehigh Valley cement plants. Production for these markets has averaged approximately 1000 tons per day. Open hearth stone is in the 6- to 12-in. size range and blast furnace stone is approximately 2- x 6-in. Cement rock sizes vary. Some of the mills order stone up to 4- or 6-in. size while others place orders for a top size of 1½-in. with the fines taken out, to mention the extremes. These products are being produced and loaded into cars without intermediate storage.

It is of interest that the company proposes to increase its overall production by 500 to 600 tons daily, with the addition of pulverized limestone, while maintaining its normal production of cement rock and metallurgical stone, without increasing its crushing and screening equipment. The crush-



Entrance into limestone mine from old quarry floor. Skip buckets bring stone for primary reduction on quarry floor and tunnel conveyor carries stone to plant above, to the left but not shown

The LATEST in SCIENTIFIC LIME PRODUCTION

• For the Large Producer

• For the Small Producer

. . . . for the Large Producer . . . . . .

KENNEDY STONE PREHEATER and DEHEATER



Just as the Army Air Corps uses a different type plane for its numerous and varied missions, we offer a lime manufacturing unit best suited for the large scale producer and one for his small-volume counterpart. Both produce the best grade of lime and do it most economically in their volume range.

- 20% INCREASE IN CAPACITY
- 40% SAVING IN FUEL
- A BETTER PRODUCT

The KENNEDY Preheater and Deheater provides a complete answer to the lime producers who want to combine the superior product of a rotary kiln with the operating economy of a vertical kiln.

This equipment effects a partial calcining of the material, thereby reducing kiln wear and kiln lengths. It recovers and utilizes exit gases, and has proved so efficient in actual operation that 40% fuel savings and increased output exceeding 20% have been recorded. At the same time a better quality of lime has been obtained.

Short kilns employing the Kennedy method also acquire an internal glaze which lessens the wear on kiln liners, lowers the power requirements, and reduces formation of kiln rings. Overburned and underburned lime is practically eliminated. Coal feed and lime calcination are switchboard controlled.

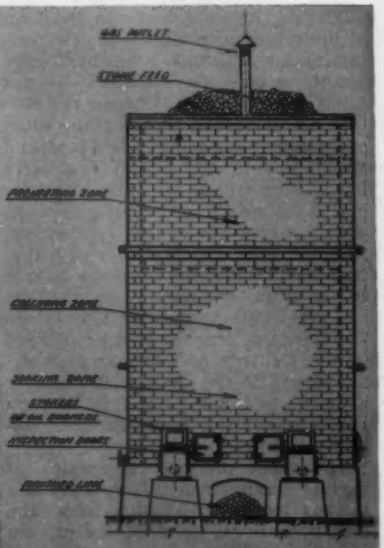
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KENNEDY VERTICAL CONTINUOUS DISCHARGE KILN

If your lime market is too small to warrant a Preheater and Rotary Kiln installation you can produce a better grade of lime five to ten tons daily with the Kennedy Vertical Continuous Discharge Kiln. It has a lower power requirement, high thermal efficiency and produces a high quality product.

The kiln is designed to calcine stone ranging in size from ¾" to 1¼", thus utilizing what would ordinarily be waste for the old type vertical kiln. Simple to erect and to operate. The fuel is thermostatically controlled, making the kiln practically automatic. It discharges continuously, eliminating overburned or underburned lime.



This kiln will have a capacity of approximately 10 tons per day of 24 hours.

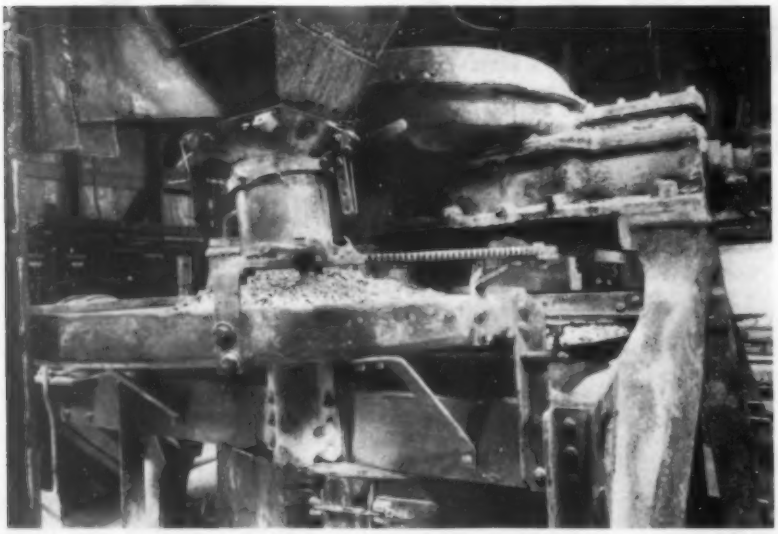
We have a very large line of mining, crushing, cement, lime-burning and pulverizing equipment, and pulverized coal equipment. If interested write for special bulletins.

KENNEDY-VAN SAUN MFG. & ENG. CORPORATION

Representatives in All Principal Cities of the United States

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FACTORY
DANVILLE, PA.



Close-up of grinding mill with feed table in foreground. Note adjustments on feeder. Drive is on extreme right; feed table motor is in circuit with main mill motor to automatically start and stop in accordance with load on main motor

ing and screening capacity is adequate to do the job and increased production in the mine is expected to keep the plant loaded to a uniform higher capacity than has been available to date.

Mine All Limestone

The company discontinued open quarrying a few years ago in favor of underground mining, to avoid contamination and make available higher quality stone. Development of the mine, at a level 400 ft. below the surface, is now reaching the stage when operations soon can be stabilized and maximum tonnage sustained. Quarry trucks supplement skip cars in bringing the stone to the old quarry floor, about 100 ft. below the surrounding country, where the primary crushing is done. Trucks dump stone into a 40- x 48-in. Buchanan jaw crusher and the stone from the skips is fed into the same crusher by a Ross chain feeder. Delivery of stone, from man-size down, to the main plant is over a 36-in. belt conveyor run through an inclined shaft that had been excavated through rock.

The main plant is a simple but flexible arrangement of crushers and screens for direct loading into cars, that now diverts part of the stream of stone to the pulverizing plant. It consists of a 13-B Telsmith gyratory secondary crusher, a 13-B Telsmith gyrosphere reduction crusher, a three-deck Robins Gyrex scalping-sizing vibrating screen and a Telsmith three-deck sizing screen. Open hearth stone is loaded into railroad cars from the top deck of the first screen, but any part or all of the stream may be diverted to the secondary crusher. Stone retained on the second deck (blast furnace stone) loads into cars. Any product can be carried by belt conveyor to the second screening tipple, which has a screen in closed-circuit with the reduction crusher by belt conveyor. Bin storage for car-or-truck-loading is provided at this tipple. The latter belt is set up to deliver stone to a 24-in. belt conveyor, 72-ft. centers, feeding the pulverizing plant.

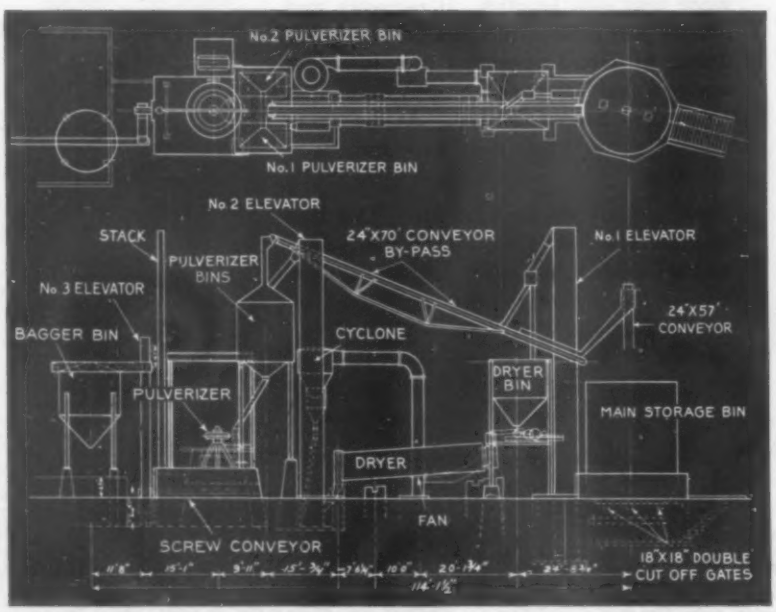
Future plans provide for reserve storage, with reclaiming conveyors, of the three principal products including stone for the pulverizing plant, but the pulverizing plant has been designed so that it has sufficient reserve, in storage bins, to be independent of the mining operations for a reasonable length of time. There is 550 tons storage provided in four bins ahead of the pulverizing operation.

Pulverizing Plant

To accommodate these reserves in storage, as well as finished product, the pulverizing plant is a sizable structure. Principal equipment in the plant comprises the grinding mill with two 50-ton overhead feed bins, a 4-spout St. Regis packing machine with an 85-ton overhead feed bin, a 6- x 30-ft. oil-fired rotary dryer with a 50-ton overhead feed bin, overhead belt conveyors, bucket elevators and a 400-ton steel tank to provide a reserve storage of incoming feed stone.

As this is being written, the plant is so new that operating data are still unavailable. The rotary dryer had not yet been placed into operation and the grinding mill was pulverizing stone that normally will be dried first for efficient operation. However, it is anticipated that the dryer will be by-passed most of the time and will be only used during the rainy months when the mine is wet and when it is desired to pulverize stockpiled materials containing wet fines. There is a considerable accumulation of fine stone in stockpiles, from 1- to 1½-in. minus, that will be eventually converted into agricultural limestone.

Normally, stone conveyed from the main plant will transfer from the cross-over belt conveyor to a second 24-in. belt conveyor on 70-ft. centers, over the top of the 400-ton tank, for direct delivery into the pulverizer



Elevation and plan of agricultural limestone grinding plant showing compact arrangement

GRUENDLER CRAFTSMANSHIP

Serving Industry over 50 Years

PULVERIZERS

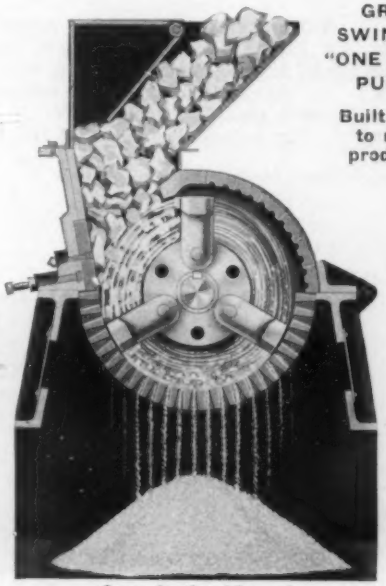
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AGRICULTURAL LIMESTONE

in "One Operation"

Crushed Stone Operators now employing a Primary Crusher should look to the New Gruendler Secondary Fine Reduction Pulverizer for Peak machine capacities and for Uniform finished Agricultural Lime.

Gruendler Equipment for unexcelled performance, quality of product and Low Cost of Operation is your basis for comparison.

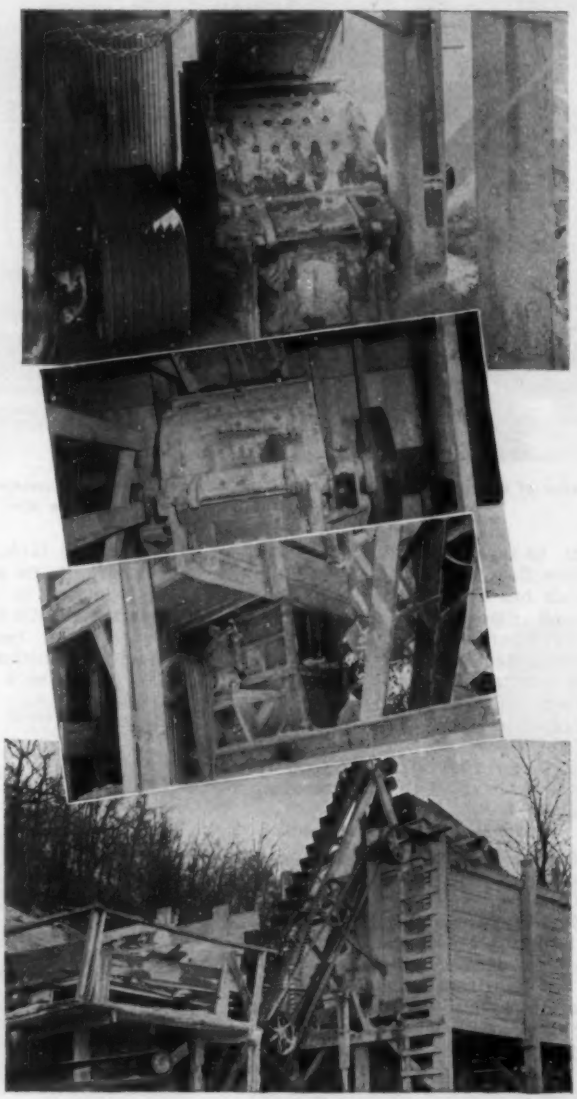


Cross Section View of Gruendler Lime Pulverizer.

GRUENDLER SWING HAMMER "ONE OPERATION" PULVERIZERS

Built in Eight sizes to meet various production needs.

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Typical GRUENDLER LIMESTONE PLANT INSTALLATIONS
Turning out from 10 tons-15 tons to 25 tons per hr., up.

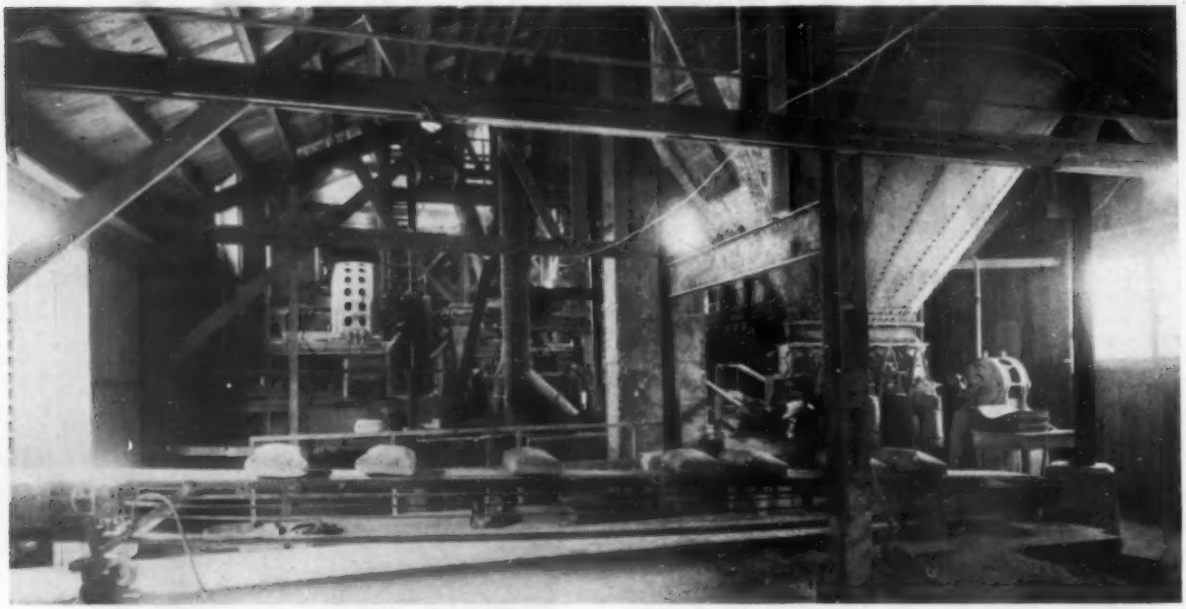
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Interior of new agstone plant. In foreground may be seen bagging machine and portable conveyor into railroad cars. In center background is the pulverizer, with ventilating pipe, and the motor drive on left

bins, to save re-handling. The alternative flow is into the 400-ton tank, which has three 18- x 18-in. double cut-off gates below for reclaiming stone, when needed, into the system. These gates are adjustable and permit withdrawal onto a 24-in. by 18-ft. belt conveyor feeding into a 65-ft. centers enclosed Link-Belt chain bucket elevator which transfers the stone onto the main overhead belt conveyor to the pulverizer feed bins.

Rotary Dryer for Stone

Another alternative flow from the main conveyor is into the 50-ton storage bin which serves the rotary dryer. When the dryer is to be used, a Robins plate feeder will regulate the flow of stone into it. The dryer is V-belt driven from a 30-hp. electric motor, is to be oil-fired with direct heat and has a Sturtevant blower to pull the heated air counter-current to the flow of stone. The blower is driven by a 25-hp. motor through V-belt. It will exhaust through an 8-ft. diameter cyclone to trap dust ahead of the stack. Dried stone will be elevated by a 55-ft. centers Link-Belt chain-bucket elevator to the pulverizer feed bins. Fines from the cyclone will be returned into this elevator or may be sacked directly from the cyclone.

Pulverized limestone is being produced through a single Bradley Hercules mill, which is a three-roll mill identical to those used for grinding raw materials and clinker in many cement plants. Material flowing by gravity through two 24-in. diameter spiral welded pipe, one from each overhead bin, onto the horizontal disc-type feed table, which is an integral part of the mill, is automatically regulated in this installation. The peripheral discharge screen is of proper size to result in specified fineness of finished product. The mill is driven by a direct-connected 300-hp. G.E. synchronous motor at a rate of approximately 125 r.p.m. and the feed table is driven by a 2-hp. motor through a single reduction worm gear.

The automatic feature of the feed

(Continued on page 106)





Above: Overall view of plant. Incline on right is from primary crusher on quarry floor level. Everything back of tipple on left is new. Below: New agstone plant. On extreme left is storage for paper bags, or if necessary, for finished product. Feed stone comes in over belt conveyor from tipple on right



Once only a sideline, agricultural limestone is now the major product of many stone producers. Even when only a sideline, many producers were able to make agstone a PROFITABLE sideline by using economical, versatile American Hammer Mills. Now, when more agstone is needed than ever before to help farmers increase crop yields and pasturage, the profitable way to get YOUR share of this tremendous demand is the AMERICAN way.

AMERICAN COMBINE . . .

DEPENDABILITY — rugged design, simple construction and the finest materials keep Americans on the job longer without breakdowns or maintenance.

UNIFORMITY — produce agricultural limestone, aggregates, or stone sand with minimum fines and no slivers or chips. Readily convertible from one product to another.

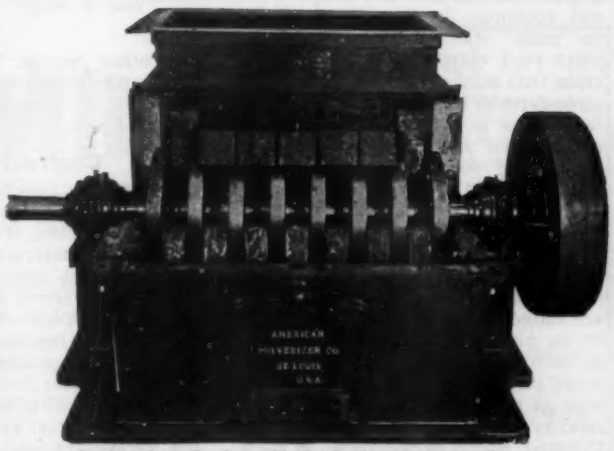
PERFORMANCE — produce better results with greater profits because of their special features. Manganese steel rings or hammers of the original American Hammer design strike the stone in suspension and shatter and distribute it before it reaches the breaker and grinding plates. A heavy alloy steel shaft gives them their powerful drive and SKF spherical roller bearings assure smooth performance.

Let us show you how an AMERICAN Crusher will help you to produce agricultural limestone economically and dependably.

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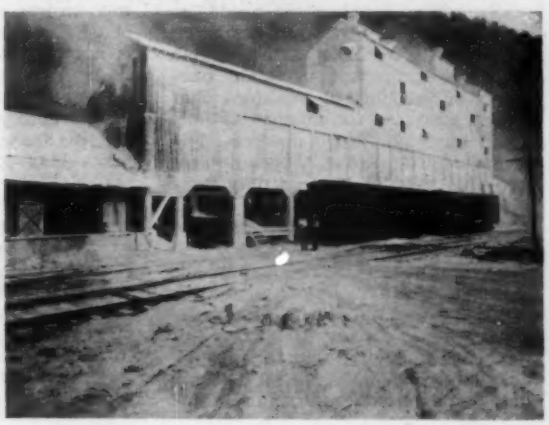
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An American Crusher with the back cover removed to show rotor assembly.

Two American Hammer Mills help make this plant one of the largest producers of agricultural limestone in Georgia. It is the Willingham-Little Stone Co. of Whitestone, Ga.



Our Government Wants More Agricultural Limestone

Summary of reports of Agricultural Adjustment Agency Officials

By NATHAN C. ROCKWOOD



Weigh batcher is often used to weigh out agstone to trucks

A YEAR AGO we were chiefly concerned about getting Federal Government recognition of the agricultural lime and limestone industry as a war-essential activity. We presented a book of arguments and facts by leading agricultural authorities to prove that bumper war crops could not continue, if farmers continued to "mine" the soil, to denude it of plant food, chief of which is the calcium that comes from applications of some form of agricultural liming material. The problem was, and still is, complicated by the fact that responsibility for agricultural production is divided by several government agencies and responsibility for production of agricultural limestone production by several more.

The aims of the A.A.A. (Agricultural Adjustment Administration) are slated to appear in the May issue in an article by Donald W. Aitken, division of special programs, A.A.A., based on the talk he gave at the session on agricultural limestone at the recent convention of the National Crushed Stone Association in New York. In that article are some very interesting figures as to the amount of agricultural liming materials used in 1943 and the goal set for 1944; also there is a table of the estimated yearly annual requirement needed to keep our soils in their present state of productivity. This table answers the fears expressed by some producers of agricultural limestone that if they produced too much now they would have no future markets. The *maximum* the A.A.A. *hopes* to get used this year of 1944, is only two-thirds of the *minimum* that should be used annually for soil maintenance only.

It will be seen from the map which accompanies Mr. Aitken's article that by far most of the agricultural lime and limestone consumption is in the Northeast and North Central parts of the country; but the Southern States' soils need liming more than any other section. This will become more apparent as dairying and diversification of crops are more popular in the South.

Contract Forms

The farmer purchaser is entitled to his soil conservation allowance under A.A.A. regardless of the way he buys his liming materials, and the total allowance set aside for these payments this year is greater than ever before. The A.A.A. claims to be merely an agency to increase the application of liming materials and its invitations to bid and its contracts are said to be drawn with that idea in mind. These contracts vary somewhat in the various regions, but are of two general forms: (1) The source of supply form, in which the A.A.A. takes bids for delivery in various counties, towns and at delivery points and at the sources of supply, and then transmits orders of farmers at these receiving places to the producer, who is not obligated to accept them, but if he does accept these individual orders he is bound by all the terms of the contract and looks to A.A.A. for his payments; (2) the A.A.A. takes bids for specific amounts of material, either f.o.b. plant or delivered to specified destinations, guaranteeing to accept all the material (within 20 percent) offered and assume responsibility for its distribution to farmers; the definite tonnage contract.

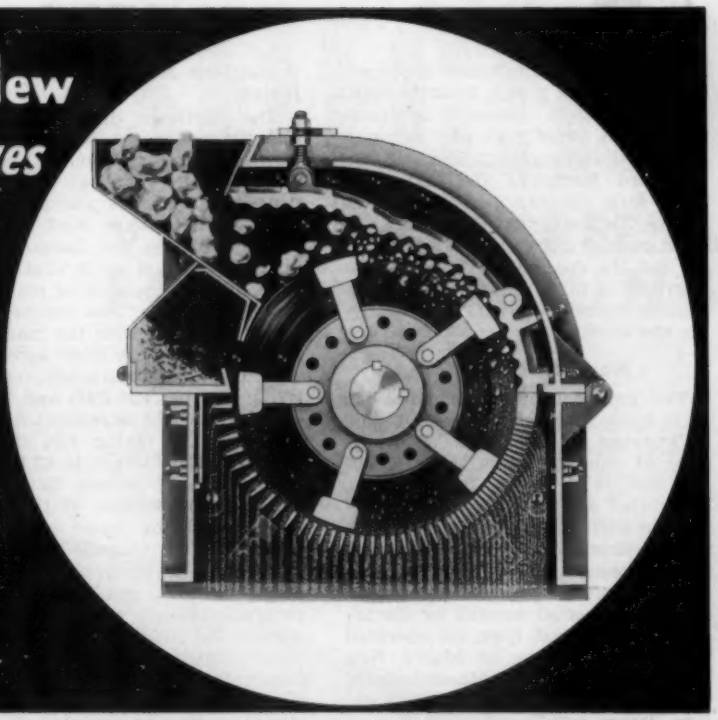
No attempt has been made, apparently, to force the definite tonnage form of contract on producers, although it would be helpful to A.A.A., its officials believe, in getting more of the material moved and used. In some regions both forms are being used; in others only one. There is no apparent objection to the producers making direct contacts with farmers, or contacting them through dealers, as they have always done, and dealing with them without the aid of the A.A.A. Many producers prefer to do this wherever possible because they do not want to become entirely dependent on the A.A.A. for the bulk of their business.

There is also a legal angle to the A.A.A. contracts of both kinds. In the case of *intrastate* shipments producers are not subject to either the 40-hour week law or the Walsh-Healey 8-hour day law, if they deal direct with the farmer. If they accept A.A.A. contracts they are bound by the 40-hour week law and if the contract exceeds $10,000 they are bound by the Walsh-Healey law as well. All producers who make interstate shipments even on farmers' orders direct are of course under the 40-hour week law.

In the corn-belt states, like Illinois, operation under the Walsh-Healey Act is particularly distasteful because it means that if there are only say three working days a week, and the producer wants to make the best use of them, and operates three 12-hour days, making 36 hours, 12 of those 36 hours must be paid for at time-and-a-half rate. Since there must be many small operators who have to depend more or less on casual labor, it becomes next to impossible to estimate costs under such an ar-

This Outstanding New Hammermill *Pulverizes*

30 *to* 40 TONS *per* HOUR of Agricultural LIMESTONE



DIAMOND

HAMMERMILL

The War Food Administration wants producers to turn out an all-time high of *15,000,000 TONS* of agricultural limestone in 1944. That's about 6,000,000 tons more than 1943 output.

Get into limestone production—investigate the new DIAMOND Hammermill. With extra long anvil especially designed for high output and uniform reduction, this hammermill hits a steady, normal production of 30 to 40 tons or better per hour! It's a "SELF-CLEANER"—does the job in a few minutes with centrifugal force—does NOT have to be opened up. Saves you hours of servicing time.

CONVERTING AGGREGATE PLANTS TO LIMESTONE

With the scanty market for commercial stone, and the tremendous need for agricultural limestone, many plant owners are planning to convert to production of limestone exclusively. In addition to the DIAMOND Hammermill, all types of DIAMOND Crushers, Screens, Conveyors, etc., are available for this purpose.

DIAMOND ENGINEERS will gladly consult with you as to type and size of equipment and production arrangement best suited for new plants or conversion of established plants.

WIRE, PHONE or WRITE for Bulletin No. D-44-L on DIAMOND Hammermills or consult us regarding your problems and needs.

Look at This List of Features—

Extra long adjustable anvil.
Continuous crushing impact.
Oversize balanced rotor shaft.
Discs double keyed to shaft.
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Adjustable hammer arms.
Interchangeable hammers.
Hardened hammer retaining pins.
Grates and anvil adjustable from outside.
Self-cleaning feature.
Structural steel, electric welded throughout.
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Trap for uncrushable material.



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rangement. The limestone producers in Illinois, as a group, recently voted against definite tonnage contracts with A.A.A. largely on that account.

All bids and contracts are made on Standard Form 33 (Revised), the short form contract with the United States Department of Agriculture, Division of Purchase, Sales and Traffic, but the space under "Articles or Services" is filled in differently in the various regions, and the accompanying specifications and conditions vary.

Northeast Division

The contract or invitation-to-bid form in the Northeast Division reads:

"PURPOSE OF INVITATION: The purpose of this invitation is to establish sources of supply for furnishing the stated agricultural liming materials in such quantities as may from time to time be required to fill farmers' requests under the agricultural conservation program of the A.A.A. during the period covered by the invitation (one year from the specified date) in the States of Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York, New Jersey and Pennsylvania."

Under these contracts the producer whose bid or bids are accepted by A.A.A. is obligated to furnish, at the prices quoted, as and when ordered by the Government, provided the material is available for delivery at the time specified in the order. No definite volume of business is guaranteed. If the producer can not make delivery, he must notify A.A.A. to that effect within five days of receipt of the order. The producer is not obligated to accept any more orders after he has notified A.A.A. he doesn't want them, but he is of course obligated to fulfill those he has accepted. The orders are placed on mutual understanding as to time and place and on the producers' ability and willingness to make deliveries. The government can of course cancel orders if materials or deliveries are unsatisfactory.

The Northeast division uses large quantities of lime, both quicklime and hydrate, and fine ground limestone, largely bagged material. Hence specifications and prices are quite different from the Middle West. The quality specification for limestone is in terms of calcium oxide (CaO), or its equivalent in the case of magnesium liming materials. The requirement is 50 percent CaO, with the magnesium oxide counting 1.39 times as much as CaO. In other words a limestone analyzing 42.1 percent CaO and 7.1 percent MgO would be converted to CaO equivalent by taking 1.39 times 7.1 percent and adding it to 42.1 percent which gives 52 percent CaO equivalent. This is because of the greater soil neutralizing value of MgO, in magnesium or dolomite limestones.

The fineness requirement for ground limestone in the State of Maine is 40 percent through 100-mesh. In this and all the other states it is 100 percent through 20-mesh, with all the fines retained. Limestone which does not meet the fineness and quality standards may be accepted at a prorata reduced price. Thus 48 percent calcium oxide equivalent, 97 percent through 20-mesh, would be accepted at 92.8 percent of the contract price. The producer has to guarantee quality and fineness, whether so-called "standard" or otherwise. Sampling is done either at the plant or point of delivery and the samples are tested according to the standard procedure of the Association of Official Agricultural Chemists.

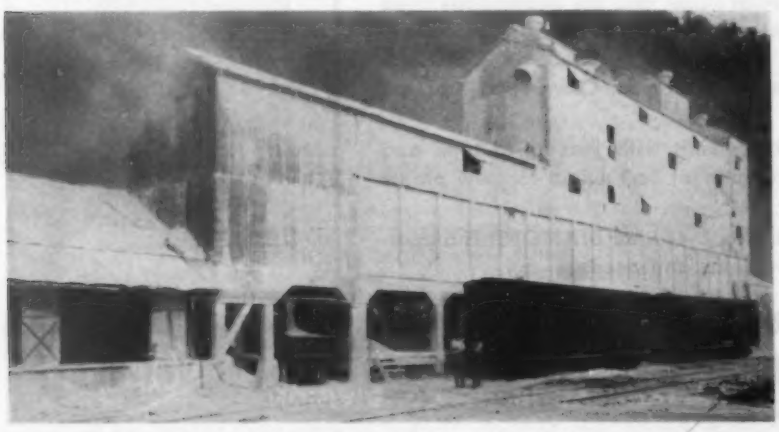
Farm deliveries are to be "service as customarily rendered in the locality." If there is a dispute as to where the material is to be dumped "the supplier's obligation shall not extend beyond delivery to the area immediately adjacent to the main farm buildings." Where "spread on the field" service is contracted for as a result of this invitation, contracts not in excess of $10,000 (which sum would bring them under the Walsh-Healey Act) are subject to the following provision (which parallels the Walsh-Healey Act): "No laborer or mechanic doing any part of the work involved in the spreading of materials on the fields in the employ of the contractor or any subcontractor contracting for any part of this work shall be required or permitted to work more than 8 hours in any one calendar day on the work of this contract, except upon conditions that compensation is paid to such laborer or mechanic for all the hours worked in excess of 8 hours per day at not less than one and one-half times the basic rate of pay. For each violation of this requirement, a penalty of $5 per day shall be imposed upon the contractor for each laborer or mechanic for every calendar day in which such employee is required or permitted to labor more than 8 hours on the work of this contract."

This is not a new contract condition, and it explains one of the reasons why in many parts of the country the practice has developed of selling the limestone at the plant to a trucking contractor and letting him "take the rap," if conflict with the law arises. Probably it also accounts for the desire of A.A.A. to have the farmer himself take the responsibility for spreading the limestone on the fields. In a time of man-power shortage and particularly a shortage of trucks and drivers, this clause must be a potent factor in preventing greater use of liming materials.

In the Northeast division, the average farm is small and field spreading service is probably the exception rather than the rule. Anyhow, ROBERT M. KOCH, head, Conservation Materials and Services Unit, Program Operations Section, Northeast division, reports it now appears A.A.A. requirements will be met; that as of February 5, some 755,766 tons of a total required 2,351,400 tons had already been delivered. The present prices bid for standard ground limestone (as previously described) range from $2.75 per ton f.o.b. plant, in bags, Pennsylvania, to $3.60 in New England. Bulk prices range from 75c to $1.00 lower. The average farmyard delivered price, in bags, is $5.60 per ton.

The amount purchased the previous year, ending October 31, 1943, was just a little more than 1,000,000 tons, so the goal set for this year, ending October 31, is more than double. Mr. Koch says this tremendous increase is being made possible "through the splendid coöperation of the industry, plus conversion of two cement company plants to production of agricultural limestone, plus ex-

(Continued on page 108)



Plant of Willingham-Little Stone Co., Whitestone, Ga., which specializes in fine stone products, particularly agricultural limestone

Why you need SELECTRO

VIBRATING SCREENS FOR PRODUCING *Agstone*

To get profits out of the Agricultural Limestone Market calls for careful, economical production. You've got to meet tough specifications at low costs in producing a material which has such a low margin of profit. Leading agstone producers are meeting requirements for 90% to 100% passing 10-mesh, or up to 100% passing 20-mesh, in some states, through utilization of the exclusive features of Selectro Vibrating Screens.



SELECTRO—Self-Cleaning, Vibrating Screens make it possible to screen to closest tolerances where specifications must be rigid. . . . SELECTRO features give amazing performance on jobs where blinding occurs due to plugging of the mesh owing to near sizes, peculiar shapes, etc. These features, plus the uniform gyratory circle-throw motion of the screen, make it possible for you to have absolute control over your product at all times, and do the job economically.

1. *Adjustable Pitch*
—screen may be tilted to 40° from horizontal in either direction while machine is in operation.

2. *Stroke Adjustment*
—can be changed quickly to eight distinct intensities of adjustment without dismantling and without special tools or parts.

3. *Floating Shaft*
—totally enclosed, operating outside the flow of materials.

3 SELECTROS AT ONE OF GEORGIA'S LARGEST AGSTONE PLANTS

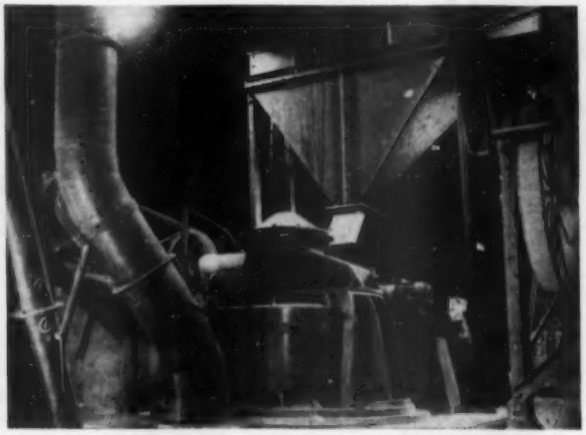
For four years now the Willingham-Little Stone Company, one of Georgia's largest agricultural limestone producers, has been getting economical and dependable service with three 4x10 ft. Selectro vibrating screens operating in closed circuit with two Hammermills. This producer turns out about 800 tons of material in 24 hours.

Write for Bulletin

PRODUCTIVE EQUIPMENT CORP.
2920-28 WEST LAKE ST. CHICAGO, ILL.

MAKERS OF THE FAMOUS "SELECTRO" • AND • "GYROSET" SCREENS





Left: Hon. R. S. Hudson, Minister of Agriculture and Fisheries, starting up agricultural limestone mill. Right: Mill and hopper feeding stone in plant of Cawood Wharton, Ltd.

Britain Turning to Agstone

Increased agricultural production has stimulated demands for more ground limestone to be used for fertilizer

To CONSERVE shipping space Great Britain has increased agricultural production immensely over pre-war years, but in the process of doing so has removed essential elements in the soil which must be replaced. Applications of ground limestone have been found to be one of the most essential and economical fertilizers, and the Ministry of Agriculture in Britain has encouraged its use.

At the request of the Ministry of Agriculture, Cawood Wharton, Ltd., Leeds, England, recently placed in operation new plant facilities for the production of ground limestone at its Holton quarry property near Oxford. This occasion brought out a notable gathering of prominent officials to witness the inauguration of operations, including Rt. Hon. R. S. Hudson, Minister of Agriculture, who pressed the button starting the plant. Other prominent officials participating were Dr. Coles of the Ministry, Sir Donald Vandepeer and Sir Wm. Garvin. E. W. Towler, chairman of Cawood Wharton, gave the address of welcome.

Stone from the quarry is about 8-in. maximum size, and is fed to a Thomas and Foster granulator crusher which reduces it to minus 1-in. Throughs are carried by bucket elevator to a Bristowe oil-fired rotary dryer. Dried stone is subjected to a blast of cold air on a reciprocating cooler "tray," after which it is taken by a second elevator to the feed hopper over the grinding unit.

The grinding unit is a Junior Hercules Mill furnished by Bradley Pulverizer Co., and supplied under Lend-Lease. At the present time mills of this type are not manufactured in Great Britain. Production of agricultural limestone with this mill is about 12 tons per hour. The ground material is discharged through a screen into a conical chamber cast in the concrete foundations immediately below the mill.

Mill drive is by V-belt from a 100-hp. motor. A separate 1½-hp. motor drives the mill feeder. These motors are interconnected through an automatic control panel whereby the mill load controls the feeder motor. When the mill is overloaded the feeder is cut out but resumes operation when the load becomes normal.

A horizontal screw conveyor delivers the ground limestone from under the mill to a third elevator, discharging into the final ground storage hopper which is designed to ensure rapid discharge for either bagging or bulk loading. Two automatic bagging machines on either side of the hopper have a capacity of 10 to 12 tons per hour in 100 lb. paper sacks. Bagging machines were furnished by Sack Fillers, Ltd., London, equipped with weighing machines by W. & T. Avery, Birmingham, England. *(Continued on page 84)*



Demonstration of agricultural limestone spreader in quarry

Here it is! A PULVERIZER DESIGNED EXPRESSLY FOR THE AGSTONE INDUSTRY

AN entirely new mill employing the best known principle of grinding. A principle that produces the desired fineness with minimum power.

IT'S the first Pulverizer that has been developed expressly for the Agricultural Limestone Industry. Simple to operate. Desired product in one operation. No auxiliary equipment.



BRADLEY TYPE 'B' JUNIOR HERCULES MILL

THESE mills are in constant operation in many of the finest agricultural limestone plants (16 to 24 hours per day) producing a finished product as fine as *100% passing 20 mesh* at the rate of 6 to 8 tons per hour depending on hardness of the rock and fineness of the finished product.

THE Type "B" Junior Hercules Mill produces a product that is very popular with the farmer and meets all government and state regulations. It is uniform at all times and fineness of finished product can be changed by merely changing size of mesh of screen on mill. The output increases or decreases with the percentage of finished product passing 20 mesh. It *always produces a large amount of 100 and 200 mesh material* which is so much desired by the users of agricultural limestone.

Engineers for Agricultural Limestone Plants
Manufacturers of Pulverizing Machinery Since 1891

BRADLEY PULVERIZER COMPANY

New York — Works and Sales Office, Allentown, Penna. — Worcester, England

In connection with the opening ceremonies, there was also a demonstration in the quarry of ground limestone spreading equipment for use with hopper shaped truck bodies, similar to American manufacture.

300 Million for Soil Conservation

More than $290,000,000 will be distributed among farmers in the United States who employ agricultural cultivating practices designed to increase output of needed crops, according to an announcement of the 1944 soil conservation program by the War Food Administration. Those practices emphasize application of fertilizers, lime, and phosphate, the planting of winter cover crops designed to protect soil from erosion, and other measures. The Federal government has been making payments for soil conservation practices since 1936, but the amount offered this year is the largest ever set aside for such purposes. Last year soil conservation payments totaled about $194,000,000.

Missouri Agstone Contract

The Franklin County Soil Conservation Association, Union, Mo., has been awarded the contract to deliver limestone to farmers cooperating with the A.A.A. program in Franklin county. The Association had the low bid and was approved by the State Committee for all townships in the county. The contract price this year is $2.25 per ton delivered to the farm. The State Committee disapproved of the bid for spread orders, and if farmers wish to have their limestone spread, it will be necessary for them to make special arrangements with the crushed stone producer. Crushed stone producers furnishing material are: Edwin .H. Kriege, Union; Frank Berner, Washington; Edwin Bebermeyer, New Haven; W. I. Bramel, Washington; Ben H. Straatmann, Villa Ridge; Leslie Bohlmann, Catawissa; and Bailey & Tourville, Sullivan, Mo.

Agstone Problems in Minnesota

(Continued from page 70)

with some differences in the equipment, and has a capacity up to 45 t.p.h. A ⅜-cu. yd. Bucyrus-Erie gasoline shovel loads stone into dump trucks and the primary breaker is an 18- x 36-in. Cedar Rapids jaw crusher set to produce a 3-in. top size product. Fines are screened out ahead of a No. 22 Gilson hammer mill, and the fine product is elevated into a 30-ton truck-loading bin. Power for the plant is furnished by International Harvester Diesel engines. Two of them, of 80-hp. each, driving the pulverizer are to be replaced by a 190-hp. engine to increase the plant capacity. V-belt drives are to be installed in place of chain, gear and flat belt drives now in use. The company operates a fleet of International trucks with two-speed axles, seven for delivery and two in the quarry. A Flink spreader attachment is also available for service to the farmer.

E. J. Leary, president of the company, believes in rendering as much service to the farmer as possible, even though the farmers know they must take the agstone when they can get it. Shipments are staggered from year to year so each territory can get delivery before seeding time at least part of the time. No paid advertising is done, but thermometers containing a small sample of agstone, visible through a glass, are given out. He probably gets some good publicity through the practice of handing out pencils to the rural school teachers for distribution to the children.

The E. J. Leary Construction Co. started in business in 1936 and originally produced commercial crushed stone. The company also operates a sand and gravel plant.

"PENNSYLVANIA" *STEELBUILT* HAMMERMILLS

REVERSIBLE

will enable Producers to efficiently and profitably meet their quota of the 15,000,000 ton Agstone program set for 1944—with the assured cooperation of the Government in the matter of supply.



Operators investigating current performance, for guidance in the selection of preferred equipment, will find "Pennsylvania" REVERSIBLE Hammermills rendering outstanding service, as result of—

- **Major Reduction by Smashing Impact**
- **Automatic Hammer Turning**
- **Automatic Hammer and Cage Bar Resharpening**
- **Reduced Power Demand**
- **Sharply Cut over-all Maintenance Cost.**



Fifteen (15) sizes permit wide selection for various plant capacities.

On receipt of specifications, we will gladly furnish the desired information and cooperate with layout suggestions, and a list of representative installations.

"PENNSYLVANIA" Engineers are at your service.

17th Floor, Liberty Trust Bldg. PENNSYLVANIA CRUSHER COMPANY **Philadelphia 7, U.S.A.**



TWO STAR PERFORMERS MAKE A WINNING TEAM



Ideal Combination for Closed Circuit Systems

STURTEVANT Ring-Roll Mills and Air Separators are each outstanding individual units. As a team they compliment each other.

The Ring-Roll Mill efficiently crushes either hard or soft materials for medium or fine reductions (10 to 200 mesh). It is easily adjustable to work at maximum efficiency with the Air Separator for the desired classification. The Air Separator, in turn, efficiently carries off all classified material leaving less reject material to be returned to the Ring-Roll Mill, thus increasing mill capacity as much as 300%. The Air Separator has a range of fineness from 40 to 350 mesh. Capacity of ¼ ton to 50 t.p.h. controlled specific surface area. Lowered mill and product temperatures.

Find out how Sturtevant Mills and Air Separators can help you boost production economically. Write for latest bulletin and engineering information now.

STURTEVANT MILL CO.
Harrison Square Boston 22, Mass.

STURTEVANT

Air Separators • Ring-Roll Mills • Jaw Crushers
Crushing Rolls • Swing-Sledge Mills
Moto-Vibro Screens • Rotary Fine Crushers



Overall view of Maymead Lime Co., plant at Shouns, Tenn., with quarry in the background

Producers Comment on Problems

Shortage of labor and inadequate trucking facilities affecting production and distribution of agricultural limestone

THE REGIONAL HEADS of the Agricultural Adjustment Agency in charge of soil conservation programs were asked to name some of the limestone producers who in their opinion were doing an exceptionally good job in meeting demands. Some of these producers have responded to a letter asking them to state their case, with emphasis on the difficulties they are meeting with in trying to fulfill demands.

J. V. OWENS, general superintendent, Eastern Rock Products, Inc., Utica, N. Y., writes:

"We have operated under this "Definite Tonnage Contracts Plan" for three years and feel that the results generally have been beneficial. In the first place we have maintained our dealers and do our distribution through them. This enables us to have indirect contact with the farmer and if this type of subsidy should be abolished we are still set up to distribute lime to the farmers without re-organizing our distribution methods.

"As far as the Walsh-Healy Law is concerned, our prices have been adjusted to any increase in labor cost gradually through the last three years. We do not feel that the effects of the Law have been any trouble to us in our operation.

"It would seem to me that the one big benefit, which we have derived from the "Definite Tonnage Contracts Plan" is that through government subsidy, distribution of lime has become more uniform throughout the year, avoiding the tremendous seasonal peaks which we were up against about three years ago. In 1941 the bulk of the material, which we shipped, went out in a three-months period during the spring. The summer season was very inactive with some demand in the fall and again very little during the winter. At the present time realizing, of course, that the market for lime has been tremendously stimulated, nevertheless we find that we are producing and shipping approximately the year around and our surges have been considerably reduced which, of course, is of great benefit to us, particularly in these times when labor is so difficult to come by."

Expect Trucking Difficulties

J. A. RIGG, vice-president, Acme Limestone Co., Fort Spring, W. Va., writes:

"With reference to telling you specifically how our company has been able in the past season to do a fairly good job in furnishing agricultural limestone, I do not know of anything that we have done specifically. In the first place, we have been very careful not to promise anything more than we felt that we could perform. However, our performance has been about up to what it usually is.

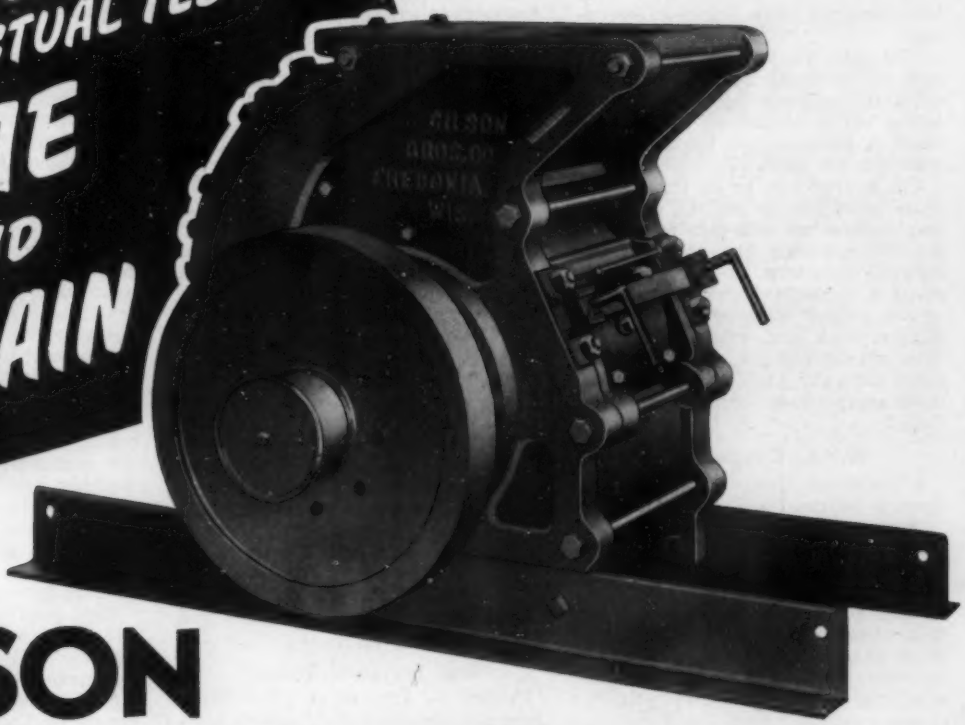
"About 70 percent of our material moves by railroad and we have had no difficulty with car supply. That part of our material moving by truck in farm-yard delivery has been handled by a very reliable truck operator living in this neighborhood. We are expecting this year, however, that both he and ourselves are going to have more difficulty by reason of manpower shortage than we experienced last year, but we are going to do our utmost to do as near a 100 percent job as possible, and if we fall down it will be for reasons beyond our control arising out of war conditions.

"In brief, I do not believe that we made any greater effort last season than a lot of other good operators made but probably were more fortunate, and we may not be so fortunate this season."

W. C. SPARKS, proprietor, Cedar Bluff Quarry, Princeton, Ky., writes:

"We have not been able to maintain normal production of this particular material because of labor shortage and a scarcity of trucks

PROVED BY ACTUAL TEST TIME AND AGAIN



GILSON
LIMESTONE PULVERIZERS . . .
Always in the Limelight

- Adjustments or replacements can be quickly made in the field without removing any major parts.
- Free-running, trouble-less operation provided by Timken self-aligning roller bearings on main shaft. Reduces power costs.
- Material construction rugged. Chrome nickel iron frame. Manganese steel hammers and screen bars. Chrome nickel steel hammer flanges.
- Operates under most severe conditions of grinding without vibration.

The No. 16, shown above, incorporates all the features of Gilson-Wisconsin Pulverizers. Designed to grind 10 to 15 tons of fine agricultural lime or crush 20 tons of road stone per hour. Has six, 24 lb. hammers; 4½ in. corrugated breaker plates; and a 600 lb. perfectly-balanced flywheel.

SEND FOR booklet describing the complete line of Gilson-Wisconsin Pulverizers.

On hundreds of installations Gilson Pulverizers have demonstrated their ability to deliver an unequalled capacity of ground limestone at lowest cost. They are easy to service—all parts subject to wear being readily accessible—and they are ruggedly built to the exacting demands for hard quarry service. Gilson Pulverizers can be profitably operated either as a pulverizer or crusher and either as a stationary or portable unit.

GILSON
BROTHERS COMPANY
Foundry & Machine Works
Fredonia, Wisconsin

within our own plant. All the trucks we now have are three or four years old and have been operated most of their lifetime two shifts a day. They are in bad shape and it is almost impossible to secure necessary repair parts to keep these trucks in operation.

"Up until this year we have always met the seasonal demand for agricultural limestone by working two shifts, but at the present time we are short a few men of having a full crew for one shift.

"It is apparent to us that unless some relief can be secured on these two matters we will not be able to produce anything like enough agricultural limestone to meet the demand in the territory which we serve.

"We are now running our plant six days a week and when the spring rush starts will no doubt operate seven days per week, in an effort to make every ton we can possibly produce."

W.P.B. Cooperates

A TENNESSEE PRODUCER, who doesn't want to be mentioned, writes:

"Selling this material in a good many counties presents us with every problem that is in the books, and we have no magic key to solve these various problems. Frankly, I think that whatever job we are doing is a result of an attitude that there is no problem that cannot be solved in some way if we have the coöperation of everyone interested.

"The fine way the War Production Board has handled our requests for maintenance and repair parts has, to some extent, solved our production problem, and our main problem is in the distribution of limestone.

"We just take the attitude that if we work hard enough and think hard enough, and if we have, as we always do, the coöperation of the A.A.A., the County Agent, and others interested in the county, then in some way we will be able to solve the problem.

"Our main job is to get truckers and in some counties persuade the truckers to get spreading equipment, and keep the Ration Boards fully advised as to what is going on, and if we could eliminate the Draft Boards from these counties I believe we could get along."

V. C. MORGAN, secretary-treasurer, The Kentucky Stone Co., Louisville, Ky., writes:

"As far as this company is concerned, we have made every effort possible to develop high production of this material at each of our nine plants. We have installed pulverizers, one of which is about due for delivery and we expect to make every effort possible to coöperate with the A.A.A. We are handicapped, however, by the very stringent man power condition, lack of trucks, and the long time it takes to obtain parts when any machinery breaks down. At one plant, we are handicapped by reason of the fact that the power company sold much of its power to the war production plants and have very little left for us. The only thing I can suggest is that in my opinion, the wise idea is to pulverize at all times and stockpile, whenever possible."

Use Farmers' Trucks

BRUCE S. CAMPBELL, president, Harry T. Campbell Sons' Corp., Towson, Md., contributes a helpful suggestion on the distribution problem:

"We sell all our Government lime through the Southern States Farmers Cooperative Association and Mr. Roop, of the Southern States Cooperative, and our Mr. Dingle worked out a plan with some 25 or 30 members of the above cooperative to haul lime into their own areas. Several of these farmers are hauling continuously every day; others only haul when there is an order in their immediate neighborhood."



Carbon Limestone Co., Youngstown, Ohio, keeps up contacts with agstone dealers and users. A bus trip to the ball game is one method of cementing friendly relations

Ohio Producers Spread Demand Over the Year

P. E. HEIM, sales manager, Carbon Limestone Co., Youngstown, Ohio, gives some good suggestions on promotion, with particular emphasis on getting the business distributed throughout the year:

"In 1942 we distributed a large poster "Lime Your Meadows." Last year we put out another poster, a little different in style, having three pictures on it, and again stating the advantages of liming meadows that are to be plowed for corn the following year. We had 2000 each of these posters which were put in feed stores and mills, Vocational agricultural schools, County Extension offices and A.A.A. offices. The designing of the poster was handled by the advertising committee of our association, working with the Extension Agronomy Department of Ohio State University. These posters have been very helpful in getting farmers in our State to use lime in an "out of season" period, so to speak.

This year we are having printed 200,000 stickers 1¾ in. x 3 in., to be attached to letters mailed to farmers and dealers by members of our association. We have omitted any signature on these and, therefore, they can be used by County Agents and the A.A.A. The wording is simple—"Lime Meadows" in large type and in smaller type the advantages. We think that by putting out 200,000 during the course of the year and continually keeping this idea before the farmers we will eventually get our program across.

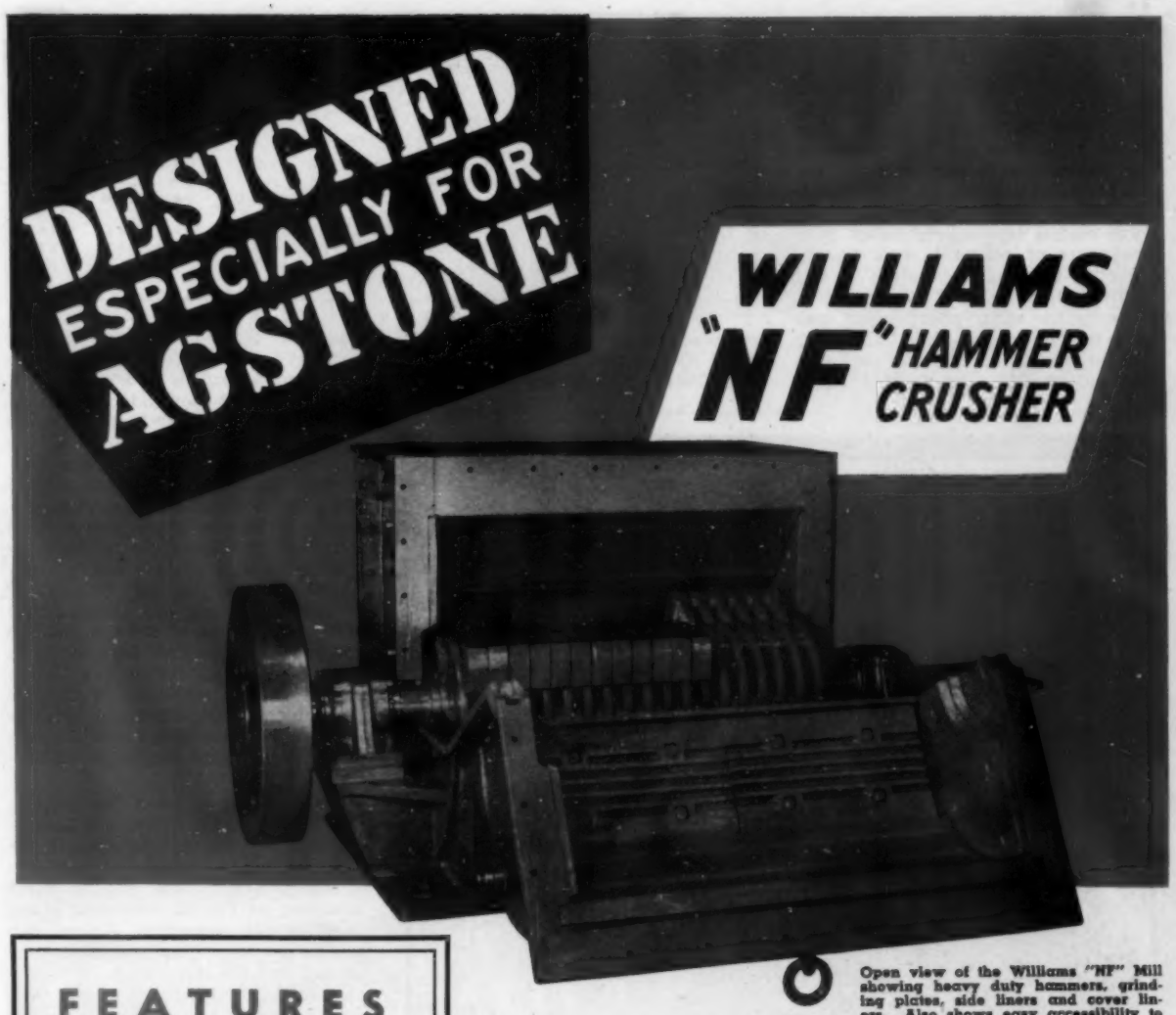
"In January of this year we held an association meeting in Columbus. At this time we tried to impress everybody with the seriousness of the situation and the importance and necessity of getting farmers to take deliveries over an eight or nine months' period. Our farmers have been accustomed to using agricultural limestone at the time of seeding, which is April and September. Now with the shortage of labor, trucks, drivers and railroad cars it is next to impossible to get the desired tonnage out in such a short period.

"To better show you what the producers are up against I am attaching a chart showing the percentage of our tonnage which we sold each month, each year, for the years 1938 to 1943, inclusive. While this is only our sales, I am certain that it is typical of the rest of the producers in Ohio. You will notice that in September of 1940 we sold 47.1 percent

(Continued on page 90)

DESIGNED ESPECIALLY FOR AGSTONE

WILLIAMS "NF" HAMMER CRUSHER



Open view of the Williams "NF" Mill showing heavy duty hammers, grinding plates, side liners and cover liners. Also shows easy accessibility to mill for repairs, etc.

FEATURES OF THE "N F"

- Adjustable grinding plate.
- Hammers adjustable to overcome wear.
- Larger capacities.
- Lifetime construction.
- 2" top liners, 1" side liners.
- Easy to work on—hinged cover.

The Williams "NF" Hammer Crusher was designed especially for reducing 4" or smaller stone to ¾", ½" or agricultural limestone. Embodies all the outstanding features Williams has developed in hammer mill design and construction and has proved itself an outstanding performer in the field.

The "NF" is built in a large range of sizes with capacities from 9 to 35 tons per hour when making agricultural limestone, affording a size mill for any job. Its principles of operation—a combination crushing and grinding—enables it to make agstone that meets rigid size specifications at a good margin of profit to producers.

"We appreciate your inquiries—write today for additional information—no obligation on your part."

WILLIAMS PATENT CRUSHER & PULVERIZER COMPANY
800 ST. LOUIS AVENUE
ST. LOUIS, MO.

Williams
OLDEST AND LARGEST BUILDERS OF HAMMERMILLS IN THE WORLD
PATENT CRUSHERS GRINDERS SHREDDERS

Producers' Comment

(Continued from page 88)

of our year's tonnage. What we are trying to do is to lower the 'peaks' and fill up the 'valleys.' The trend is in the right direction and shown by the percentages in this table for November and December of 1943. I think our efforts are beginning to show some results but will probably take five years of constant work to accomplish the desired results.

PERCENTAGE AGSTONE SHIPPED EACH MONTH 1938 TO 1943 INCLUSIVE

Month	1943	1942	1941	1940	1939	1938
January	.5	1.0	.5	.5	.5	.9
February	.4	5.4	.6	.9	.8	.6
March	1.4	2.3	.8	1.3	1.8	2.3
April	6.5	14.5	18.2	4.9	8.5	15.8
May	6.8	11.7	10.2	22.1	24.0	12.1
June	4.9	3.2	2.4	2.3	1.9	2.6
July	2.1	1.5	.9	1.2	.8	1.3
August	14.7	15.0	12.5	3.8	19.4	14.6
September	34.5	33.4	41.4	47.1	31.3	34.4
October	11.9	10.0	7.7	13.8	8.5	11.8
November	8.4	1.7	2.5	1.5	1.7	2.8
December	7.9	.4	2.3	.6	.8	.8

"In Columbiana County, Ohio, there is an extra effort being put forth in the way of a Lime Campaign. The producers in this territory are coöperating with the County Agricultural Agent, Agricultural Adjustment Agency and the Soil Conservation District Committee. This county has been using about 25,000 to 30,000 tons of agricultural limestone per year, but according to a recent survey shows that they should use about 300,000 tons per year in order to get all tillable acreage to grow alfalfa mixtures and to treat desirable permanent pasture land. We are sending out a series of post cards each month, with a short concise statement about lime and its importance to the agriculture of that county; also informing the farmers of the shortage of trucks for hauling and trying to get them to use lime in more months of the year. Our posters are also being used. Articles appear in local newspapers. At all meetings of farmers the subject is also discussed. As time goes on I believe that other counties will follow a plan similar to Columbiana.

"In addition to what the association has been doing, individual companies have been advertising with the same thought in mind.

"All producers are in the same situation as far as enlarging plant facilities are concerned. If they can get the machinery and materials they cannot get the labor to do the constructing. In my opinion the only way to solve the problem is to use the available plant and merchandising facilities more days of the year. In our particular case we can increase our production 50 percent if we could sell limestone in eight or nine months of the year. If the consumers of agricultural limestone will change their habit and accept deliveries in more months than has been customary I believe that the 1944 requirements of Ohio farmers will be met."

Wisconsin-Michigan Situation

GORDON W. HUGES, sales manager, Inland Lime and Stone Co., Manistique, Mich., has a good word to say for all the producers in his neck of the woods:

"Last year we started producing pulverized limestone for the agricultural trade and we moved a small tonnage. This year we are going at it in a much bigger way and hope to ultimately be a real factor in this field. We are pulverizing our stone at our Port Inland operation. All of our product from Port Inland moves by rail. We do not have a trucking situation involved. Most of our product

ANNOUNCING

another addition to the

NEW HOLLAND LINE

OF HAMMER CRUSHERS



Model 30

. . . for still greater capacity in producing agstone and the finer aggregates at low cost.

Special features include adjustable swinging hammers with renewable multi-point hammer tips. Adjustable breaker plate. Tramp iron pocket. Heavy duty roller bearings and welded steel plate construction.

Write for bulletin

NEW HOLLAND MACHINE CO.

NEW HOLLAND, PENNSYLVANIA

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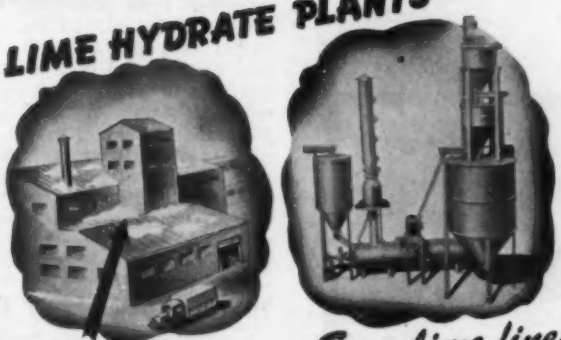


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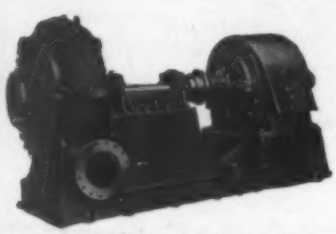
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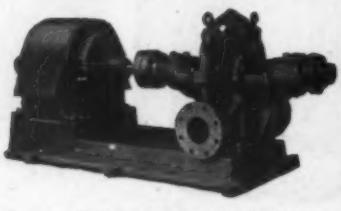


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Engineers who have wondered about the origin of this expression may get some idea from the above illustration. This Morris Centrifugal Pump is certainly "full of grit"—literally as well as figuratively. The stamina which has enabled it to operate with complete satisfaction on this difficult slurry-handling service is typical of the quality built into all Morris Pumps: whether used for clear water, chemicals, pulpy or abrasive mixtures. Have you the Morris bulletins on pumps for your requirements? If not, be sure to write for copies.



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CENTRIFUGAL PUMPS

is moved into the northern tier of counties of Wisconsin.

"I feel the agricultural limestone industry throughout Wisconsin and upper Michigan is snapping into the program and, providing they are not crippled for the lack of labor, trucking facilities and rail equipment, they should be able to produce a much larger tonnage than has ever been produced heretofore. Whether or not they can produce all the tonnage the State of Wisconsin and upper Michigan need remains to be seen. The majority of men connected with this industry in Wisconsin are alive and very energetic."

Double Agstone Capacity at Kansas Plant

GARNETT ROCK CO., Garnett, Kans., has stepped up the production of agricultural limestone from 200 to 400 tons a day. W. W. Leatherby, secretary of the A.A.A. committee in Anderson County, Kans., where the plant is located, reports that 23,000 tons of agstone were spread in the county last year, and the goal this year has been more than doubled with a total of 60,000 tons needed. This represents participation by more than 80 percent of the farmers. Delivered prices range from $1.90 a ton in certain townships to $2.15 a ton in others. Eighteen truck and spreading units are operated by the company for delivery and spreading. In order to meet the government specifications, the amount of agstone passing through a No. 8 screen multiplied by the calcium carbonate content must yield the factor of 0.72.

Big Tonnage for Shasta Dam Conveyor

NEARLY 11,400,000 tons of aggregates had been delivered up to December 1, 1943, by the nine-mile belt conveyor from Redding, Calif., to Shasta Dam. All 26 conveyor belt flights have sprays on the return section for removal of adhering material, and all but the first eight flights have top sprays. The first eight flights from the sand and gravel plant do not have top sprays as the aggregates come from the plant in a wet condition. In addition to the elimination of dust, the sprays also have cooled the rubber during the summer months.

Install Temporary Plant

CONSOLIDATED ROCK PRODUCTS CO., Los Angeles, Calif., has installed a screening and crushing plant beside Santiago Creek at the east city limit of Orange, Calif., following approval by the board of supervisors. The company had asked for a permit for only six months during which time it expects to extract all commercially valuable material from the location. About 100,000 tons of material will be stockpiled at the site.

Chemists' Corner

Specifications for Portland Pozzolanas

Part 5: Mexico's Bureau of Standards has drawn up specifications for portland-pozzolan types of cements

By ALTON J. BLANK*

TAKING into consideration the data outlined in the articles which have preceded, it is suggested that the A.S.T.M. specification term "Blended" cement be changed to "Blended, or Processed Cements."

Under the heading "Inert non-deleterious materials," it has been found that the maximum allowance for insoluble residue content is 25%. It will be recalled from previous articles on "processed" Atoyac cement, we utilize clays, shales, sands and other siliceous or argillaceous materials in the rough proportion of 75% of this type of material, which is reacted with 25% caustic lime before being submitted to grinding in the tube mill with about 65% of portland cement clinker to produce a cement having the setting and strength qualities of a standard portland cement.

This type of Atoyac cement has been on the market in Mexico, in fact, it has practically displaced the portland cements that were formerly used in the Southern markets during the three years it has been in use. A specification covering inert, non-deleterious materials such as that which has been drawn up, would entirely eliminate the use of siliceous and argillaceous materials such as we are using, and would permit the use of only blast furnace slags as well as certain pozzolanic materials of a like nature which contain a certain amount of combined lime. The use of calcined siliceous or argillaceous materials such as siliceous sands, clays, shales and the like, even though they may be of the calcined variety would still have higher insoluble residue contents than are permitted under the specification limit of 25%, and the outlawing of the use of raw or calcined materials of this nature would not only be a severe blow to producers that are making use of these types of materials, but as well would be an unfair treatment of patents and processes for the production of cements of the "blended" and "processed" variety, that, after having been on the markets for years, and subjected to the most severe tests and uses, have given excellent results.

In view of the fact that blast furnace and other slags, volcanic tufas, etc., have low insoluble residue contents, and are available in only given sections in the States, discrimination against the use of siliceous and argillaceous materials found in almost every section of the country, would be unfair to many producers, and advantageous to only a few. If the specification for the "blended" or "processed" types of cement were to limit the insoluable residue content of the finished product to 25% as a maximum, such a specification would result in fair treatment to a large number of producers, instead of being advantageous to only a few as is apparently intended.

Strength Tests

In connection with this argument I give the following test data taken from reports covering tests carried out several years ago by my father at a portland cement plant in the Southern part of the States. In a number of tests 5% of a high calcium lime was hydrated in the presence of 18% of a highly siliceous clay having a high insoluble residue content, and the mixture was ground in the tube mill with 77% of portland cement clinker. The strength average of the four cements produced was as follows:—1:3 sand briquettes, 24 hours 272 lbs., 3 days 373 lbs., 7 days 414 lbs. and 28 days 503 lbs. The average portland cement produced at this Southern plant from the same clinker with which the special cements were made, is as follows:—1:3 sand briquettes at 24 hours 165 lbs.; 3 days 285 lbs.; 7 days 375 lbs., and 28 days 465 lbs.

In this instance as in others, the advantage in strength of the "processed" cements over the portland is easily recognized. Similar tests carried out at the cement plant of another portland cement plant in the Eastern part of the States, in which cement rock was used in connection with highly siliceous clays, processed, and ground with portland cement clinker, gave similar results. These results confirm our findings here in Mexico with cements of this type that have been produced and consumed during recent years, as well as confirming our findings at another plant in Central America.

Physical Properties

Under the heading of fineness, mention is made in the specification that the chemical composition of the residue retained on the 325-mesh screen, shall be essentially the same composition as that of the original sample.

In this connection it can be stated, and from almost every chemist's experience, that the chemical composition of portland cement retained on the 325-mesh screen, is usually somewhat different from the chemical composition of the original sample, since it is usually composed of the harder particles of clinker that do not readily pulverize in the mill, and the residue composition is usually somewhat higher in silica and lower in lime and sulphur trioxide than that contained in the original sample.

In the production of "blended" or "processed" cement where siliceous materials are used, and where these siliceous materials may be hard to pulverize (as in the case of the harder particles of portland cement clinker) it is only natural that the residue on the 325-mesh screen may be higher in siliceous content than the original sample. It is therefore suggested that some limit be given to the variation that may result in the chemical composition of the residue when compared with the chemical composition of the original sample. (It will be noted here that no such specification as proposed above exists in present portland cement specifications.)

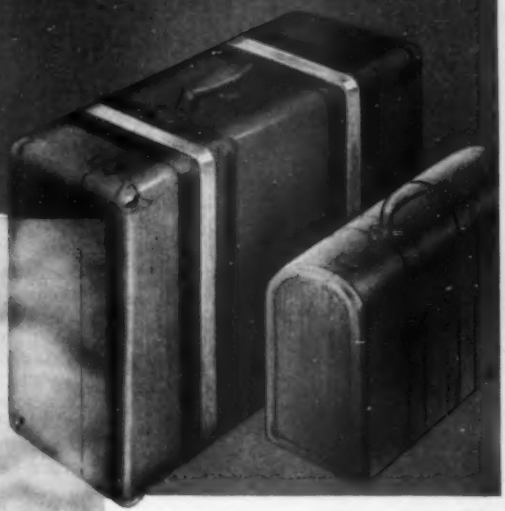
Under the heading of "Time of Set" the Vicat needle is specified, whereas in the A.S.T.M. Specification covering portland cement, both the Vicat and Gilmore needles are specified. It is not quite understood why the Vicat needle is given preference in connection with the determination of the time of set for "blended" cements, unless it is due to the fact that the Vicat needle makes for a stricter method of test that would eliminate certain types of cements that would otherwise pass similar specifications governing use of the Gilmore needles.

In connection with the time of set of "blended" and "processed" cements, it has been my experience that the Vicat needle is not as reliable as the Gilmore needles. In determining the normal consistency of the "blended" type of cement, or the Atoyac type, both of which may be high in silica and may be rightly termed as "silica cements," you may use 10% more mixing water in arriving at the normal consistency, than would be used in arriving at

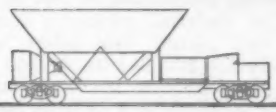
(Continued on page 118)

*Executive vice-president, Cementos Atoyac, S. A., Puebla, Puebla, Mexico.

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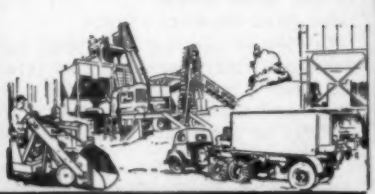
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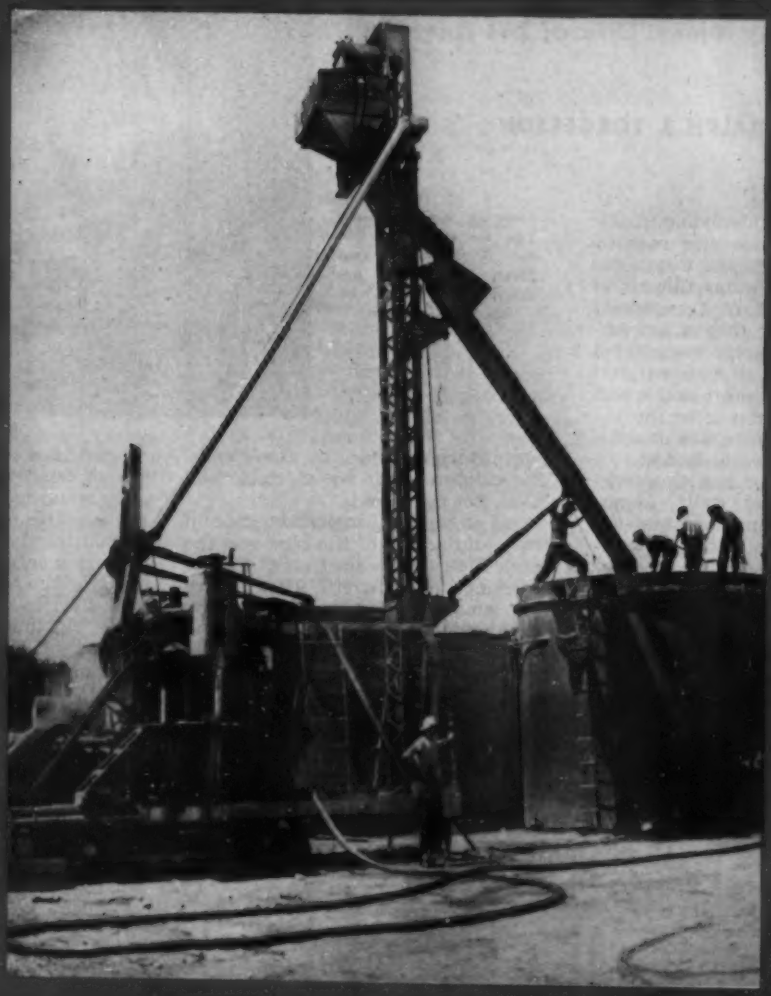


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CONCRETE PRODUCTS AND CEMENT PRODUCTS



Pouring 12 W. 6 in. concrete pipe, Lock Joint Pipe Co.

APRIL
1944

Mile of Pipe for Power Plant

American Pipe and Construction Co., manufactured and installed 96-inch concrete pipe for circulating water tunnels for Harbor Steam Plant, City of Los Angeles

By RALPH S. TORGERSON



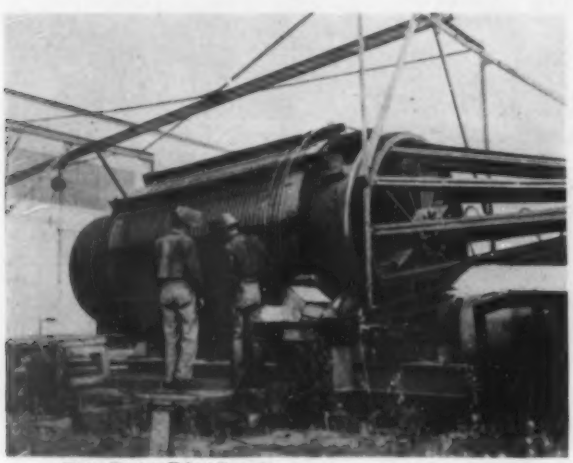
Lowering large concrete pipe for circulating water in Harbor Steam Plant, City of Los Angeles. Pipe rest on crushed stone mat

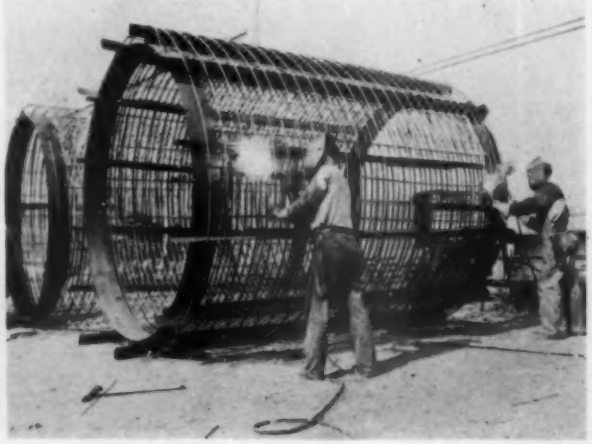
One of the most interesting installations of concrete pipe recently completed on the Pacific Coast was for the circulating water tunnels of the Harbor Steam Plant, Department of Water and Power, City of Los Angeles, Calif. Concrete pipe was selected for the job because it replaced steel essential to the war effort and it also offered greater resistance to the action of sea water. There was in addition a substantial saving in cost.

The American Pipe and Construction Co., Los Angeles, Calif., manufactured the pipe and also had the contract for its installation. Approximately 5000 ft. of 96-in. I.D. pipe was involved in the job. The pipe was cast vertically in 12-ft. lengths. Each pipe section weighed 21 tons. It was reinforced with two concentric cages of reinforcement, spirally wound, and held in place by suitable longitudinal reinforcement welded to the spirals. The reinforcement was 7/16-in. and ⅜-in. hot rolled rods.

One of the most important steps in the manufacture of the pipe was the fabrication of the steel cages for reinforcing the concrete. These cages were made by first winding ⅜-in. reinforcing steel on a mandrel and welding to horizontal spacers; then the rod ends were welded together to additional 7/16-in. spacers. Where welded bars were used for transverse reinforcement, each weld had to test to a stress of 40,000 p.s.i. of bar.

Standard methods were employed in pouring the cast concrete pipe. Reinforcing cages were lowered into the inside steel form, and then the outside steel form was lowered over the cage. The inner and outer forms were welded of 8-gauge sheet steel and were of sufficient thickness to prevent distortion when the concrete was





Photos Courtesy Hobart Bros. Co.

Left: Winding reinforcing cage wire on mandrel. Right: Welding rods together with 7/16-in. spacers





Photos Courtesy Hobart Bros. Co.

Left: Lowering outer steel form over inner form and reinforcing cage preparatory to pouring concrete. Right: Section of concrete pipe on low trailer ready for hauling to destination

poured. It was necessary that they be accurately made to the dimensions shown on the plans for the inner and outer diameters of the finished pipe, 96-in. I.D., 106-in. O.D.

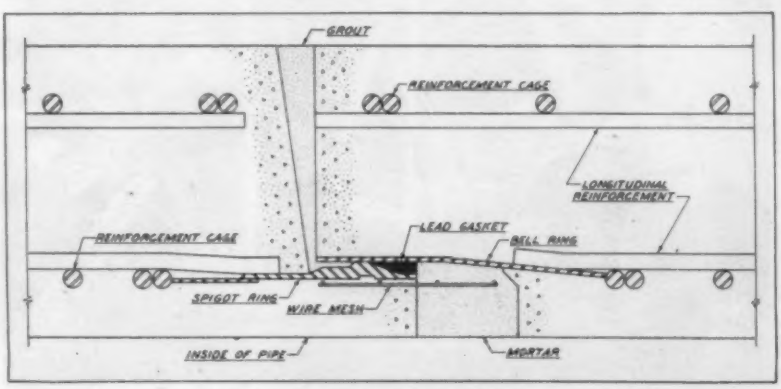
Concrete mixture was about a 1:2:3 mix, and the maximum size of coarse aggregate was ¾-in. Concrete in the pipe forms was compacted by both internal and external vibrator equipment. The pipe was cured by a combination of steam and water curing. Low-bed trailers were used to haul the pipe to the job site.

The pipe was laid about 16 ft. below sea level, and was largely constructed in a tunnel so that traffic above could be carried on uninterrupted. A crushed stone mat was first laid, on top of which two lines of pipe were placed. A concrete cradle or backfill was then poured around the pipe to a depth of about 3 ft. In the open cut sections a crawler-tread mounted mixer on the bank above was used to spout the concrete into place. In the tunnel, a "concrete gun" mounted on narrow-gauge track placed the concrete and the sand backfill.

The concrete pipe joint was a lead and steel joint with the bell and spigot each being made of a welded steel ring which was, in turn, attached to the longitudinal members of the reinforcement cage by welding. The sealing agent was a fiber-filled lead gasket which was caulked into the joint recess from the inside of the pipe.

Ready Mix Laboratory

FISCHER LIME AND CEMENT CO., Memphis, Tenn., is now producing ready mixed concrete under the supervision of Barrow-Agee Laboratories, Inc. Supervision will include daily tests of aggregates, and specimens of concrete and constant supervision of batching operations. The Fischer Lime and Cement Co. maintains a fleet of 32 mixer trucks.



Cross section of reinforced concrete pipe joint for power plant installation

Post-War Housing

APPEARING at a hearing before the House Public Buildings and Grounds Committee, National Housing Administrator John B. Blandford, Jr., indicated that the main post-war undertakings of the Federal Government in relation to housing should be in a fiscal, insurance and credit framework, with any aid given to publicly financed housing made a part of "the whole housing picture.

"If our housing future is shaped in these terms, a program of 1,000,000 to 1,500,000 houses a year for a 10 to 20 year period, becomes clearly an obtainable goal," said Mr. Blandford. "This might mean a capital investment, preponderantly private, running up as high as $8,000,000,000 a year and a volume of employment running up to 4,000,000 or 5,000,000 workers, taking no account of the indirect economic benefits of such a program."

Sell Block Plant

THE WAYNE CEMENT PRODUCTS CO., Greenville, Ohio, has sold all its equipment at public auction held on February 22. The owner, Harry Williams, died recently and his widow decided to sell the plant and equipment as a going business. The late Mr. Williams also was a salesman for the Greenville Gravel Co.

Buy Pipe Concern

THE KLAMATH CONCRETE PIPE CO., Klamath Falls, Ore., has been sold by Frank R. Hamblet and Robert Mahan to Floyd L. Somers and Miles Stuart, Medford, Ore.

Merchandising

Concrete Milk House

Badger Concrete Co., Oshkosh, Wis., furnish concrete masonry and Cook & Brown Lime Co. and Courtney and Plummer provide ready mix

A UNIQUE and very effective type of selling concrete structures to the farmer was carried out at Oshkosh, Wis., in 1943 when there was erected on the Winnebago County Fairgrounds a concrete masonry milk house complete with insulated concrete milk cooling tank and all the appurtenances.



Milk house, constructed on Winnebago County, Wis., Fair Grounds, of concrete masonry with precast concrete lintels and sills. This is P.C.A. model 302

The project was sponsored by the Winnebago County Dairy Plant Operators' Assn. with the cooperation of the County Agent and the County Fair Board and, of course, the material producers including manufacturers of concrete masonry and ready-mixed concrete. All materials were donated by Winnebago County dealers and manufacturers. Badger Concrete Co., Oshkosh, Wis., furnished the concrete masonry, precast sills and lintels; Cook & Brown Lime Co., Oshkosh, and Courtney & Plummer, Neenah, Wis., provided the ready mixed concrete, and Oshkosh Stone Co. supplied the stone.

A. W. Jeske, the contractor, donated a large portion of his work to the project.

The idea was conceived just shortly before Fair time and it was only through the sincere efforts and aggressive tactics of the committee for the Dairy Plant Operators, complete cooperation by all parties, and prompt delivery of materials that the milk house was completed in time for the opening of the Fair.

Thousands of farmers visited it during fair week, inspected its construction details and saw it actually in operation. Hundreds of them went home and arranged for one to be built on their farms and hundreds more will do likewise next year and for many years to come. One farmer came to Badger Concrete Co. and said he wanted materials for a milk house exactly like the one at the fair grounds and referred to it as the "Heddy Lamar" milk house, meaning of course that it was tops in milk house construction.

The milk house is a part of the Fair now just as much as the grandstand or agriculture hall. It performs an important function during fair week. Dairy cows being exhibited give milk the same as they do at home and this milk should be properly cooled and cared for the same as it is or should be at home.

The County Fair now sets an example in the care and handling of fresh milk for farmers to follow—a true and important function for any County Fair.

The concrete masonry manufacturers and ready-mix producers feel definitely that this project has stimulated sales of materials not only for milk houses but for other farm structures as well. They feel further that it will continue as a silent salesman for them and for their products down through the years as long as cows give milk and the public demands that such milk be clean and pure.

It is predicted that this project will be duplicated at many other County Fairgrounds in Wisconsin during 1944. Several counties are already definitely planning for it.

The enterprise was a small but very effective part of the campaign for

(Continued on page 100)

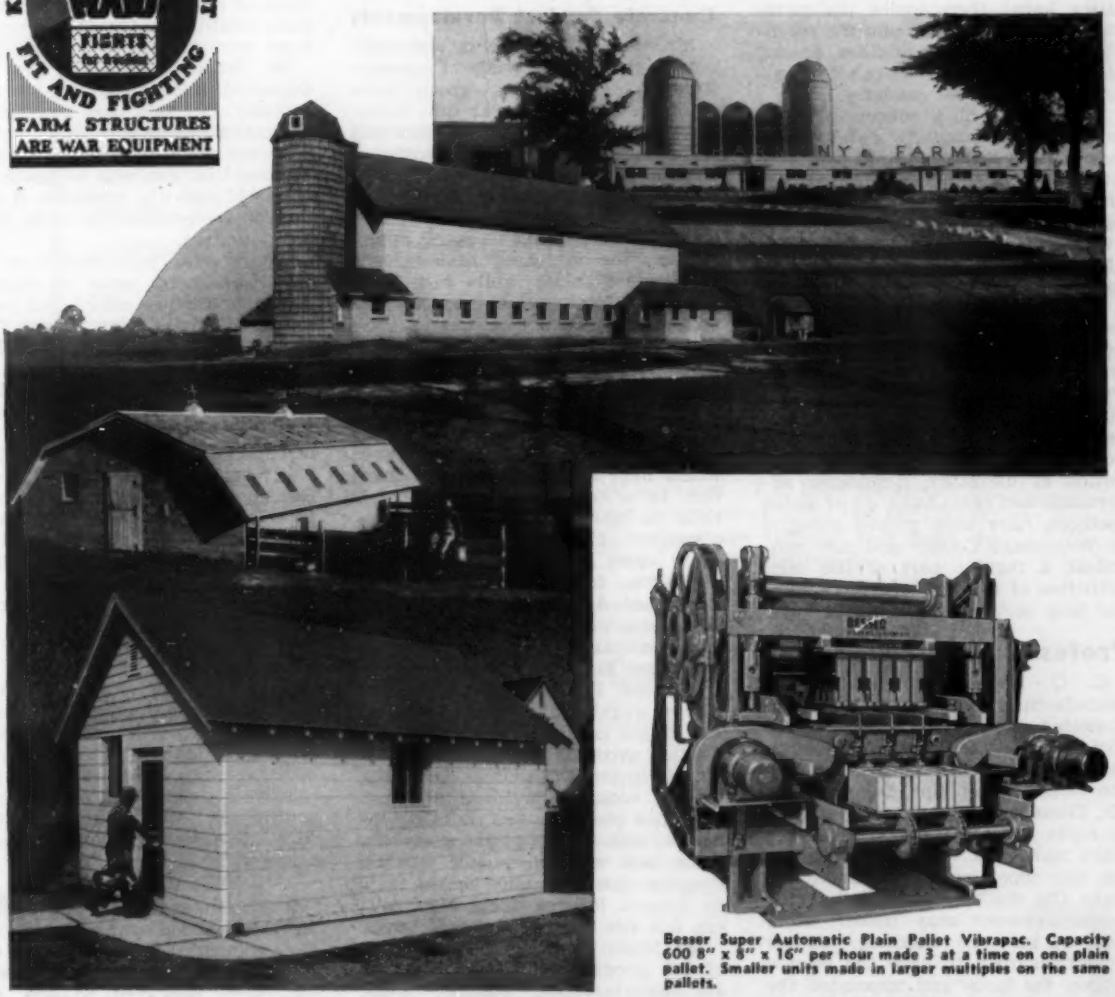


Construction view of milk house showing cooling tank inside

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FOOD FIGHTS for Freedom
FARM STRUCTURES ARE WAR EQUIPMENT

Besser Vibrapac Better Concrete Masonry Units for Farm Buildings Insure Safety, Permanence, Better Sanitation, Greater Economy and Increased Labor Saving.



Besser Super Automatic Plain Pallet Vibrapac. Capacity 600 8" x 8" x 16" per hour made 3 at a time on one plain pallet. Smaller units made in larger multiples on the same pallets.



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THE SAVING IN PALLET COST WILL PAY FOR A BESSER VIBRAPAC PLAIN PALLET STRIPPER

high quality Grade A milk production conducted throughout the state by the University of Wisconsin, State Dairy Department, county agents and dairy plant operators. As a result of this campaign it is estimated that 5500 milk houses were built in Wisconsin in 1943, and there is every indication that at least as many will be erected in 1944.

One Concrete House Leads to Another

A concrete milk house is but the first step a farmer takes in equipping his farm for production of Grade A milk. He soon follows with the construction of a concrete floor in the dairy barn; then comes the pavement of his barnyard, and the reconstruction of other buildings around the farm, all of which call for concrete and concrete masonry.

It behooves all producers of these materials to intensely develop this new outlet as everything points to little more urban construction in 1944 than there was in 1943. The farm market, on the other hand, gives every indication of continuing at the 1943 level and even surpassing it in many sections of the country.

Producers in other sections can well emulate the efforts and activities of those in Winnebago County by the erection of model structures at County Fairgrounds or on private farms strategically located and easily accessible. Sales promotion should also be carried on by direct mail, distribution of literature, newspaper advertising and radio talks, all of which methods have been proved effective in Winnebago County and now constitute a regular part of the sales activities of the producers throughout that section of Wisconsin.

Protest Pipe Discrimination

C. O. Davis, concrete products manufacturer, Mount Vernon, Wash., protested the recent action of the city council which restricted further sanitary sewer installations to only the vitrified clay pipe. In protesting Mr. Davis said, "We have no protest to make against the clay pipe. We don't want you to legislate against the clay pipe; we only want you to leave the matter open so that the property owner may install either type at his own choosing." Mayor Novotny agreed to have the council reopen the issue and appointed the city's sewer committee to file a definite report at the March meeting.

Aggregates for Concrete

The Grand Island Sand & Gravel Co., Dayton, Ore., has received a contract to furnish material for a 100,000-gal. concrete storage tank for road oil for the State highway department to be built at Whiteson, Ore.

War-Born Concrete Products

American Concrete Institute Convention Reports

An entire session of the 40th annual convention of the American Concrete Institute, held in Chicago, February 29 through March 2, was devoted to precast concrete. Three committee reports were presented for discussion, all of which previously were published in the *A.C.I. Journal*, and an unpublished paper, "War-Born Concrete Products," was presented by C. F. Moore, structural engineer, Cement Products Bureau, Portland Cement Association.

Concrete Product Developments

Mr. Moore illustrated by stereopticon views a great variety of concrete product developments which have arisen as a result of war-time material shortages and new applications for concrete products. He mentioned the use of concrete beams to replace steel in the construction of industrial buildings, the substitution of concrete tanks for steel tanks in many applications, the increased manufacture of concrete burial vaults with little or no reinforcing steel and the development of extensive use of concrete milk cooling tanks and septic tanks on the farms. He mentioned that a manufacturer of concrete products in Ohio was making very large concrete water storage tanks.

In his opinion, concrete joist floors, which have replaced wood construction to a considerable extent, will have an increased market. New applications of standard concrete masonry units, for protective walls in war areas, for partitions, etc., were illustrated. Another wartime application, for a war industry, was the use of acoustical, light-weight units for structures in which airplane engines are tested. Ballast blocks, of heavy slag aggregates and weighing up to 190 lb. per cu. ft., were illustrated.

Other products described and illustrated included concrete bathtubs, precast concrete mullions for sash and glass block, shower stalls, catch-basins, man-holes of 5000 p.s.i concrete, sash weights, tractor weights, stepping stones, practice bombs, traffic buttons, heating ducts, lawn rollers, fish net weights and coal boxes.

Mr. Moore said that he had record of 185 producers in 35 states that are manufacturing wartime items. Man-hole covers and rings are being manufactured by 69 concerns, concrete bathtubs by 11 and shower bases by 27. In Minnesota, he said that one concern had manufactured 121,000 sash weights requiring 1000 bbl. of portland cement while in New York State 40,000 tons of concrete have gone into the manufacture of ballast block. One Iowa manufacturer is selling 300 milk tanks per month.

C. G. Walker, managing director, Cast Stone Institute was asked, following Mr. Moore's paper, to comment on the status of concrete bathtubs, since the stand of the Public Health Service that they were not healthful. Mr. Walker said that a reputable bacteriological laboratory had taken cultures and concluded that plain concrete tubs were equally as sanitary as enamel tubs. Furthermore, on a Utah housing project after 18 months of service, the surfaces of bathtubs were in at least as good condition as when the installations were made.

Mr. Walker commented that rings deposited in concrete tubs are not a problem, but said that resistance to thermal shock is the main hurdle in concrete bathtub manufacture. He believes that concrete bathtubs have excellent post-war prospects. A specification for concrete bathtubs is now being written.

Mr. Walker described field tests that have been made on manhole covers and rings which led to approval of these units under heavy service conditions. In a test in Manhattan borough, New York City, tests were conducted on an installation made in a lane to the Holland tunnel. After more than six months' service, no cracking or extensive chipping had resulted. In a test conducted in Brooklyn, the same findings resulted. In a Queens test, a manhole was installed in an asphalt yard with the top 3 in. below the drive level so that the installation would be subjected to impact from loaded trucks. No defects were apparent.

Specifications for cast stone proposed by Committee 704 and published in the *A.C.I. Journal*, February, 1942, were adopted as standard in this meeting. The principal changes provided in the specification are an increase from 5000 to 6500 p.s.i. compressive strength for cast stone and a proposed reduction in the permissible absorption from 7 percent to 6 percent.

Concrete Silos

W. M. Gurney, chairman, Committee 714, presided over a discussion on "Recommended Practice for the Construction of Concrete Silos," which had been published in the *A.C.I. Journal*, January, 1944. The report, with minor changes, will come up for adoption as standard in 1945.

F. N. Menefee, chairman, Committee 711, presided over a discussion on "Minimum Standard Requirements for Precast Concrete Floor Units," published in the February, 1944, issue of the *A.C.I. Journal*. This report, too, will be up for adoption as standard in 1945.

A NEW
J & C BLOCK PRESS
for your Post-War Plant



Only recently have we felt justified in devoting part of our engineering "know-how" from the pressing urgency of war work back to the field of block and brick making machinery. Final drawings are now nearly completed for a new, rotary table block machine.

This machine has a rotary table with four mold boxes so arranged that while a pallet is being placed in one mold, another is being filled, another is being hydraulically pressed, while the fourth is being ejected. Vibration and pressure are combined in making the block. Features which have contributed to 35 years of successful J & C brick presses are being incorporated in this new unit. But it's the many new features that make the new J & C unit newsworthy.

Write for facts so we can advise you when details as to capacity, operation, delivery and price become available.

Quick facts about the New J&C Block Press

1. Blocks are pressed hydraulically under vibration.
2. High Production and smooth action.
3. All working parts enclosed and lubricated for long life.
4. Produces a product of greater strength at lower cost.

Don't Buy a Block Machine Until You See the New J & C

JACKSON AND CHURCH CO.
SAGINAW • MICHIGAN

Specialties

CONCRETE as a Plumbing Accessory

Fiat Metal Manufacturing Co. makes concrete shower cabinet receptors in plants at Chicago, Ill., Pasadena, Calif., and Long Island City, N. Y.

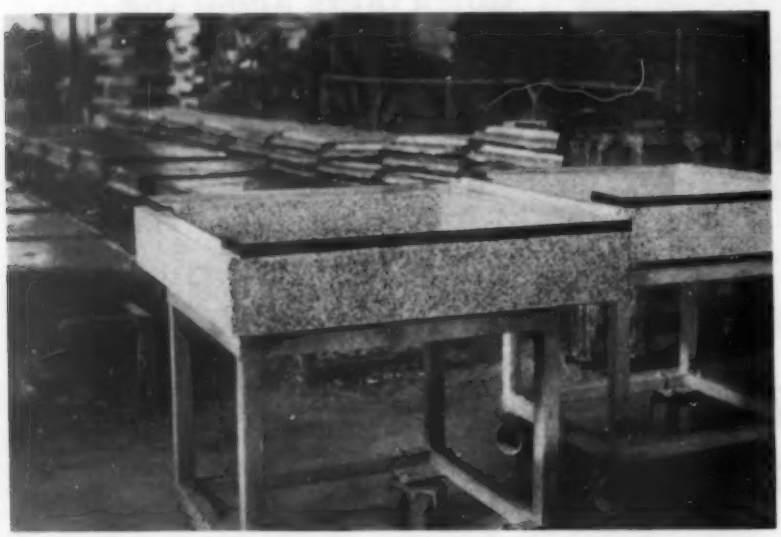
By RALPH S. TORGERSON



Polishing and grinding terrazzo receptors. Note truss type gages above

WAR DEMANDS from federal housing projects and from the armed services have boosted the production of shower cabinets to new heights during the past two years. Restrictions on the use of metal for bathtubs led government authorities to turn to the manufacturers of shower cabinets to meet this heavy demand for sanitary facilities with a product which would use a minimum amount of metal.

The Fiat Metal Manufacturing Co., with plants at Chicago, Long Island City, N. Y., and Pasadena, Calif., had a background of experience in the manufacture of shower cabinets dating back over twenty years ago when the founder, G. A. Nilson, a practical master plumber, designed the first prefabricated shower cabinet. In their need for immediate delivery, the government turned to the Fiat organization to help supply the urgent requirements for shower cabinets. For years this company had been making shower base receptors of concrete and terrazzo, primarily as a plumbing accessory in the manufacture of their regular line of shower cabinets. The receptors had to be of the best quality because the name of the company stood back of the finished product installed on the job. A reputation and sales organization built up over many years could not be jeopardized by the production of a shower receptor which was not made to the highest standards.



Close-up of terrazzo shower receptors mounted on special dollies to facilitate handling

With three plants strategically located throughout the country for quick delivery and minimum freight charges, the Fiat Metal Manufacturing Co. was in position to immediately fill the most urgent orders from the government. While other companies came into the picture at a later date, the Fiat company probably supplied more shower cabinets than any other and during the past two years sold nearly 150,000 units with concrete shower receptors. The Chicago plant alone has a capacity of 125 shower receptors a day.

Manufacturing Facilities

All three plants manufacture complete shower cabinets, and have somewhat similar production facilities for making the concrete shower receptors. The Chicago and Long Island City plants use a Waylite concrete aggregate, but the Pasadena plant employs special crushed rock aggregate as Waylite is not available on the Pacific Coast.

A description of the concrete receptor manufacturing facilities at the Chicago plant may be considered typical of the other three plants except for details as to arrangement and some equipment items.

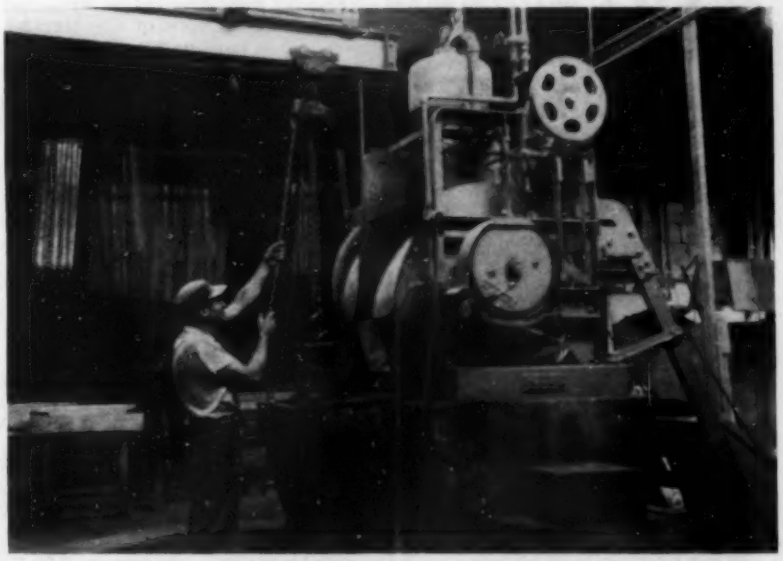
Mixing equipment is somewhat unusual. A No. 10 Koehring Kwik Mix bituminous type mixer with paddle blades is used to mix the concrete instead of the usual drum type as it is believed that the paddle blade

action is more efficient for this purpose. The mixer has a capacity of 10 cu. ft., but it is usually never operated at more than 7 cu. ft., which is the capacity of the unloading bucket. This always assures adequate mixing of the concrete without overloading.

The bituminous type mixer was changed over only slightly for concrete mixing by removing the heating unit and installing an automatic water measuring unit. Water is measured out very accurately for each batch by setting a dial that controls the valve. When the dial is once set it is not changed except when a different mix is being made. Both hot and cold water are piped to the measuring tank on the mixer so that water can be tempered to any desired degree by operation of valves.

Waylite aggregates are raised by skip into the mixer drum, a handy lever controls the flow of water, another lever actuates the drum for dumping, and a push button controls operation of the paddle. After mixing the concrete is dumped into a special 7 cu. ft. steel bucket which is elevated by a chain hoist for sufficient clearance so that it can be moved to the casting room by means of an overhead tramway system made by the Chicago Tramrail Co. This system covers almost the entire plant, largely eliminating all lifting by manual labor and reducing any possibility of rough handling to a minimum.

The bucket is moved on the overhead trolley directly in line with the mixer to the overhead crane sections in the casting room. There are two transfer overhead tracks of ½-ton capacity, one for each section, which serve as overhead cranes, permitting the pouring of concrete into steel molds supported on steel stands made by the company. This permits operations on a production line basis and proper curing before stripping from the mold. Molds are made by the company to exacting standards so that specified dimensions can be held to close tolerances. The 7 cu. ft. bucket has a capacity for pouring about 4½ of the 32-in. type shower receptors. No vibration is used in placing the concrete as the mix is plastic and easily puddled into place without any voids, resulting in a dense, hard concrete.



Paddle type concrete mixer with automatic water measuring tank above and concrete bucket being raised by hoist for transfer to casting room

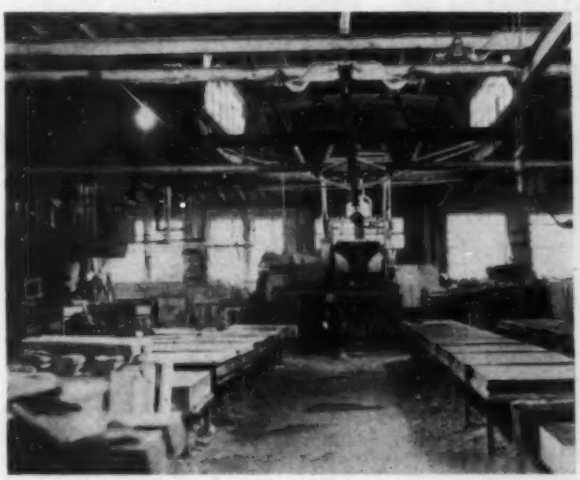
Before pouring, each mold is fitted with the metal drain and with a metal flange for wall fastening. The metal flanges are so constructed that they add to the reinforcing. This is a special feature of the Fiat shower cabinet which facilitates setting up the walls by merely using a screw driver.

After stripping, the receptors are moved to any place in the plant or to the shipping room by the same overhead tramrail system by means of an interesting lifting device which looks very much like an ice tongs.

Terrazzo Finished Receptors

Some very beautiful examples of terrazzo work are to be found in the higher priced shower cabinet receptor models. Black and white marble chips, No. 0 and No. 1, with white portland cement are used in producing the terrazzo mix. Standard practice is followed in pouring this mix which is backed up with a plain concrete. Terrazzo concrete receptors are handled somewhat differently than the standard concrete type.

After stripping these receptors are placed by means of the tongs and overhead system onto special dollies for handling in the grinding and





Left: Looking down aisle toward paddle type concrete mixer with overhead transfer crane above. Right: Production line system of manufacturing shower receptors requires large number of molds

CONCRETE PRODUCTS MACHINERY

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Continuous and Batch

BLOCK MACHINES
Vibra-Press and Strippers

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Aggregate and Concrete

TRANSMISSION MACHINERY
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PALLETS
Pressed Steel or Cast Iron

TAMPERS

THE KENT MACHINE CO.
CUYAHOGA FALLS • OHIO



"ANCHOR"
Complete
EQUIPMENT AND ENGINEERING SERVICE

Equipment for all phases of manufacturing concrete cinder block and other lightweight aggregate units. Our engineering service for new plants and modernizing old ones will help you operate more economically.

Hobbs block machines, Anchor tampers, Anchor Jr. strippers, Stearns power strippers, Stearns Joltcrete, Stearns mixers, pallets, Straublox Oscillating attachments, etc.

Repair parts for Anchor, Ideal, Universal, Stearns, Blystone mixers and others.

Anchor Concrete Mchy. Co.
1191 Fairview Ave., Columbus 8, Ohio

polishing room. The illustrations show how these dollies are used.

Special truss-type gages are used to check dimensions of the terrazzo receptors. These gages may be seen suspended from the ceiling of the polishing room. Any irregularities are ground off to conform to specifications. All grinding is done wet to eliminate any dust. Both rough and fine grinding tools are used, all of which are suspended from an overhead trolley to eliminate any heavy lifting of tools from dolly to dolly. Grinding equipment includes Mall Tool and Wyzenbeek & Staff equipment, and Norton and Carborundum wheels.

The entire set-up of the Chicago plant and the plants at Long Island City and Pasadena is designed to produce a quality product with the most efficient methods, and no expense has been spared to do this job. Having its own metal shop, forms can be made for the numerous shower cabinet models, such as corner, built-in type, and extended receptor.

Officers of the company are S. E. Nilson, president; W. W. Johnson, secretary; O. Ostergren, treasurer. Tom Kuehl is superintendent of the Chicago receptor manufacturing plant.

Ease Cement Shipping Rule

War Production Board officials, commenting on the proposed suspension of regulations governing rail movements of portland cement, emphasized that the action does not imply any easing of the difficult transportation situation. On the contrary, they said, demands upon all types of transport during 1944 are expected to exceed substantially the record-breaking traffic load of 1943. Dr. Wm. Y. Elliott, Director of the W.P.B. Stockpiling and Transportation Division, said that the reason for the suspension of cement shipping controls was that it was felt that they are discriminatory, inasmuch as cement is at present the only solid commodity so regulated. Most liquid commodities shipped in tank cars have been restricted in movement since October, 1942. Dr. Elliott said, however, that if traffic conditions should demand it in the future controls over cement deliveries will be restored.

Pumice Concrete in California

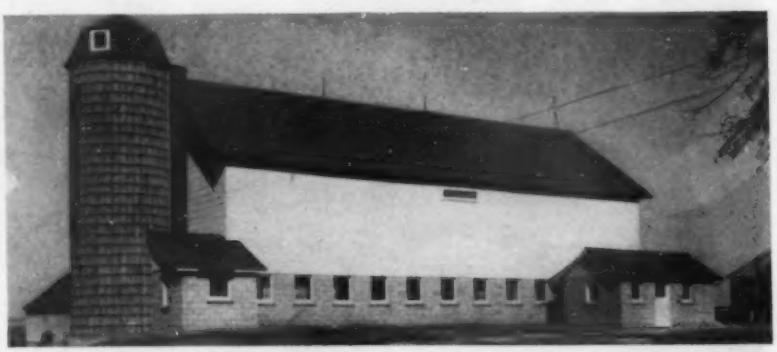
Pumice, excavated from Glass Mountain, 12 miles south of Tulelake, Calif., is being used in Klamath Falls, Ore., for the manufacture of pumice concrete tile, scheduled for a government building project at Medford, Ore. The processing plant, closed for many months, has been reopened at Cinder Butte, Calif., where the pumice is dried, screened, sized and loaded for shipment.

Anticipate Higher Earnings in 1944

Kelley Island Lime & Transport Co., Cleveland, Ohio, reported a net income of $93,463 in 1943 as compared with $291,321 in 1942. President Ralph L. Dickey, in his annual report to the stockholders, said that 90 percent of the company's business is with the steel and construction industries and while the war has caused capacity operations for the steel industry, it has forced a decline in the construction industry to levels approaching the early 1930's. However, he said that while it is probable building construction will continue at a low ebb, the outlook for 1944 is that substantially improved earnings will be made over 1943. Sales and earnings were reported now running at a much more satisfactory rate than they were a year ago. Several new lines are ready for market, and while quite limited now, will offer an opportunity for substantial volume when products for civilian use can be manufactured.

Wisconsin Products Meeting

Wisconsin Concrete Products Association held its annual meeting at the Ambassador Hotel, Milwaukee, Wis., March 21. Herbert Loucks, Madison, Wis., is president of the association.



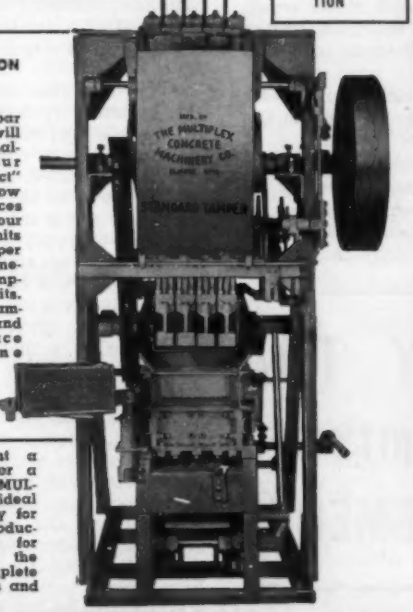
Large dairy barn near Rockford, Ill., with concrete stave silo, concrete masonry first floor in the barn, and concrete milk house recently completed

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The MULTIPLEX 8-bar Standard Tamper will turn out a high quality product—your "packaged product"—at surprisingly low unit costs. It produces from three to four 8 x 8 x 16 in. units a minute. Hopper agitation and time-feeding while tamping make better units. The Standard Tamper makes plain and stripper, or face blocks, on one base. Strike-off hopper assures a smooth top.



Whether you want a single small unit or a complete plant, MULTIPLEX makes the ideal equipment necessary for economical mass production. Write today for booklet describing the MULTIPLEX complete line of block-makers and mixing equipment.

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ELMORE, OHIO

PERFORATED METAL SAND AND GRAVEL SCREENS

Manufactured exactly to your specifications

Any size or style screen, in thickness of steel wanted with any size perforation desired.

We can promptly duplicate your present screens at lowest prices

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Build CONCRETE Improvements Now!

Help save feed and labor



A sanitary concrete floor and new concrete masonry walls converted this old farm structure into a modern dairy barn. New concrete milk house (at left) was built at the same time.

Concrete Men! You can help farmers save labor and increase war food production with concrete improvements. The materials required are not critical and are easily available.

The old dairy barn, illustrated above, is an example of the effectiveness of concrete repairs. This structure was restored with concrete for many more years of usefulness.

Timely concrete replacements can add to the life and utility of thousands of other farm buildings.

Phone your farmer friends. Call on them personally—write them letters. Suggest concrete improvements which will save feed and labor. Advertise your services to farmers in local newspapers. Ask us for advertising suggestions for use with farmers. Send for your copy of *"Restoring Old Farm Buildings With Concrete."* Free in U.S. and Canada.

PORTLAND CEMENT ASSOCIATION
Dept. 4-45, 33 W. Grand Ave., Chicago 10, Illinois

A national organization to improve and extend the uses of concrete . . . through scientific research and engineering field work

BUY MORE WAR BONDS

Build Agstone Plant

(Continued from page 76)

consists of a Westinghouse solenoid control connected into the circuit between the main motor drive and the feed table motor and maintains the load on the main motor between predetermined high and low amperages. When the load on the main motor builds up to 85 amperes, the feed table motor shuts off until the mill has cleared itself of stone to reduce the load to 80 amperes, when the motor starts up again. This automatic control is designed to maintain a uniform load on the mill for increased output and reduced maintenance and to guard against dangerous overloading. Adjustments can be made to the electrical equipment to control the amperages at which the cut-off and cut-in of the feed table motor occur. The feeder arm on the table feeder, which strikes off the stone to be fed into the mill as the table revolves, has 30 adjusting notches and is set according to the size of feed or the moisture condition of the feed.

Production drops off with increased moisture content, but, previous to starting up the dryer, wet stone up to 3-in. size was being fed and a product of the analysis previously mentioned was being produced at a rate of approximately 30 t.p.h. However, in feeding fine, wet materials, the mill temperature rises and the tonnage produced naturally is reduced. With a dry stone, the operator of this plant expects to realize 45 t.p.h.

A 1½-in. minus stone is considered the optimum feed size, rather than finer size stone, since the larger particles serve as a cushion in the mill and, it is expected, that material near that size will be fed to the mill when the plant comes into full production. It is also expected that several thousand tons of accumulated screenings in stockpiles will be pulverized when sufficiently dried out or after passage through the dryer. The dryer is merely to be a means of operating the pulverizer under more ideal conditions.

The pulverizer is ventilated to relieve back pressure and to dispose of excess moisture as vapor through the stack as the result of a combination of a strong circulation of air through the mill and the heat generated in grinding. Under normal times, a single feed bin for the mill would have been installed, but due to scarcity, two 50-ton hopper-bottomed bins were secured. This has worked to advantage, at least previous to running the dryer, since it has been possible to blend extremely wet fine material from one bin with more favorable stone from the other to feed a material which could be pulverized at a high production rate.

Pulverized stone from the mill is transferred by an 18-in. screw conveyor into a Link-Belt enclosed bucket elevator, 34-ft. centers, to fill an 85-ton packing machine bin. At the head of the elevator there is an 18-in. screw conveyor enclosed with a slotted screen to catch tramp iron. The conveyor is installed so that it could be extended for loading out bulk agricultural limestone if there is ever a demand for it.

However, the plant is producing bagged agricultural limestone for A.A.A. contracts exclusively, for rail delivery to rail heads in Pennsylvania and New Jersey on the Reading railroad. The product is bagged in 80-lb. 3-wall paper sacks fitted with pasted air valves, carrying the label "Annville High Calcium Pulverized Limestone" and the guaranteed analysis of 53.70 total oxides and 100 percent through 20-mesh.

Bags are loaded into cars over portable belt conveyors, one on 30-ft. centers carrying the bags into the car doors and transferring to another 10-ft. reversible conveyor extending into the car. A car of 40 to 50 tons load is loaded in approximately one hour.

Six men are required to operate the pulverizing plant on a shift; two at the packing machine, two in the car being loaded, one for the pulverizer

THREE REASONS WHY TDA
IS USED IN MAKING THE MAJORITY OF
HIGH EARLY STRENGTH CEMENTS

1 TDA is a powerful grinding aid.

★

2 TDA assures the manufacture of a uniform product.

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3 TDA improves the desirable properties of the resulting concrete, particularly in strength, plasticity and durability.

TDA is not an air-entraining agent and does not lower the density of concrete. It is the only addition to High Early Strength Cement permitted by ASTM.

TDA
the accepted grinding aid for all portland cements.

DEWEY AND ALMY
CHEMICAL COMPANY
CAMBRIDGE 40, MASSACHUSETTS

and another to look after the dryer and conveyors. The plant has a complete master control board with magnetic switches for each piece of equipment and convenient push button switches near each moving machine. Connected electrical horsepower is approximately 486. The bag storage shed will provide a reserve space for 400 tons of finished product.

Much of the steel work was fabricated locally. The piping and cyclone, stacks, etc., in connection with the dryer installation were fabricated by the McCarter Iron Works, Norristown, Penn. Executive offices of the company are at Conshohocken, Penn.

Cement Production Declines

BUREAU OF MINES reports that the production of finished cement continued to decline through January and the output during the month fell to 6,322,000 bbl. or 50 percent below January, 1943. This rate of decline was more severe than the 41 percent decrease noted in December. The January, 1944, production was considerably greater than demand and approximately 1,125,000 bbl. entered stocks. Shipments from mills during January dropped to 5,040,000 bbl.; a decline of 42 percent from the mill movement in January, 1943. Whereas the monthly volume shipped from the mills during October-December, 1943, had been approximately the same as the average quantities shipped during these months in 1935-39, the January, 1944, shipments were about 750,000 bbl. greater than the average January movement during 1935-39. This relatively favorable showing in January indicates that a larger than usual proportion of consumption is in sections of the country where winter weather does not seriously curtail construction activity. Mill stocks of finished cement at the end of January totaled 24,434,000 bbl., the largest quantity on hand since April, 1942. The January 31, 1944, stocks gained sharply over those on December 31, 1943, and were 14 percent larger than on January 31, 1943.

The following statement gives the relation of production to capacity, and is compared with the estimated capacity at the close of January, 1944, and of January, 1943:

RATIO (PERCENT) OF PRODUCTION TO CAPACITY

	Jan. 1943	Jan. 1944	Dec. 1943	Nov. 1943	Oct. 1943
The month..	60.0	30.0	40.0	46.0	53.0
12 months...	74.0	61.0	54.0	56.0	59.0

Mexico's Irrigation Program

MEXICO will spend more than $16,000,000 on its irrigation program in 1944 which will make possible the irrigation of an additional 260,000 acres. This seems to indicate a big market for concrete pipe and other concrete uses.

Manganese Steel is "*At Its Best*" in Ball Mill Liners . . . . . .

Manganese steel has been used with outstanding economy for a generation in ball, rod and tube mills operated by mining and cement companies because of its stress-resisting toughness and its ability to withstand abrasive wear under brutal battering.

For crushing, grinding or pulverizing equipment of every type, manganese steel cannot be surpassed for coping with the terrific impact and abrasion that the wearing parts in such equipment must withstand; and, consequently, is usually the best value, regardless of lower pound prices sometimes available on less reliable metals. Here, as in so many other instances, a somewhat higher price (when it is higher) is more than offset by greater mill production, fewer shut-downs and lower maintenance charges.

Such parts as these, with their unsurpassed wearing life and resistance to breakage, are available to you in Amsco manganese steel, for ball mills, rod mills, tube mills, Kominuters —in fact, any type of heavy duty grinding equipment: breast plates; shell liners; end liners, feed and discharge; clamp bars; feed scoop lips or noses; Kominuter plates; grates and screen plates; gears and pinions; and manhole covers.

Be sure — specify Amsco manganese steel to the manufacturer of your mill when ordering replacement parts or new equipment.

Ask for Bulletin 1141-L on Ball Mill Liners and Bulletin 743-M on Manganese Steel in Mining and Quarrying Equipment.



S-16. 36 tons of manganese steel shell, manhole and end liners for 6'x8' and 5'x7' rod mills.



513-4. 112 outside and 50 inside end outlet grates for ball mills used in grinding gold ore, total weight 40 tons. They were machine ground on top surface to true them up, something unusual in ball mill grates.

Amsco
AMERICAN MANGANESE STEEL DIVISION
Chicago Heights, Illinois

AMERICAN Brake Shoe COMPANY

FOUNDRIES AT CHICAGO HEIGHTS, ILL.; NEW CASTLE, DEL.; DENVER, COLO.; OAKLAND, CALIF.; LOS ANGELES, CALIF.; ST. LOUIS, MO.
OFFICES IN PRINCIPAL CITIES

Government Wants More Agstone

(Continued from page 80)

pansion of capacity of several plants already in the industry."

In all these States, except New York, Mr. Koch states, a tremendous effort is being made to get farmers to do their own hauling, either from plant or rail head. In New Hampshire all deliveries are made on a rail-head basis; in Vermont two-thirds of all deliveries on that basis, in Maine one-half, and in Rhode Island all is called for by farmers at rail sidings; in Massachusetts about half is picked up by farmers at plants or rail heads, as is also the case in Connecticut and New Jersey; in Pennsylvania only about one-third of the total is taken by farmers at plants or rail heads.

State	Through 10-mesh screen	$CaCO_3$ Equivalent	Total oxides
Maryland	100 percent	..	45 percent
Delaware	100 percent	..	45 percent
Virginia	100 percent	85 percent	
West Virginia	90 percent	85 percent	
North Carolina	100 percent	85 percent	
Kentucky	*80 percent	*80 percent	
Tennessee	*80 percent	*80 percent	

*Minimum product of percentage passing through 10-mesh screen multiplied by calcium carbonate equivalent must be at least 0.7200.

Mr. Koch says that while there have been several bottlenecks interfering with completion of the program, those in connection with W.P.B. priorities, bags, tires, trucks and freight cars have been and are being satisfactorily handled by representatives of A.A.A. and W.F.A. He says that the most serious troubles arise with producers who still are not sufficiently aware of the existing facilities to help them, or with those who fail to present their cases properly. The most serious difficulty and the only one that may prevent fulfilment of the program is the man-power situation—now a universal difficulty.

East Central Division

C. G. DEGEN, senior administrative officer, East Central division, A.A.A., reports on conditions there as follows: The contracts under which purchases of limestone and other liming materials are made are source of supply contracts. Suppliers may offer material delivered to farmyards by counties, or f.o.b. plants for rail shipment or truck movement.

Specifications for limestone by states are shown in table, above.

Hydrated lime purchased in Maryland and Delaware must contain 65 percent total oxides.

Ground burned lime purchased in Maryland and Delaware must contain 80 percent total oxides.

Plant prices in 1944 average slightly higher than in the past; some producers have established new prices under Rule 3 M.P.R. 386; some others have advanced prices within ceilings previously established; and several have maintained prices at pre-war levels. Prices have in the past varied considerably by areas of the region. Present range for bulk limestone is from 75 cents to $3.70 per ton. Weighted average is estimated at approximately $1.10-$1.20.

Delivered prices have increased due to higher truck transportation costs, and range from $1.50 to $5.50 for bulk limestone delivered to farms.

Farm delivery is provided by the supplier in a large part of the area. County committees have contracted with local truckers to make farm deliveries from plants or rail points in much of the remainder. Farmers will provide their own delivery from plants or rail points in approximately 10-15 percent of the counties.

Shortage of labor is the principal bottleneck hindering production. Trucks, tires and gasoline shortages also affect distribution.

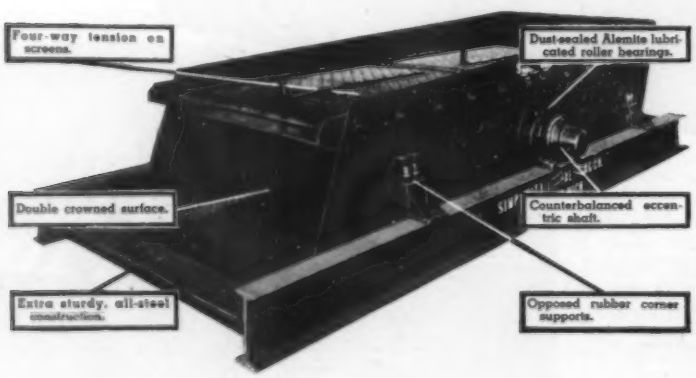
The plant labor problem has been

CLEANER MATERIALS MORE ACCURATE SIZING

—SAY CUSTOMERS OF LARGE WESTERN FIRM USING *Simplicity* SCREENS

Recently the head of a large Aggregate Producing company in the West made this statement.—"I've always understood that Simplicity Gyrating Screens were good, but I didn't realize how good they are until after I installed that 4'x 10' triple deck screen in one of my plants. No other screen is one, two, three, when compared to a Simplicity. Hardly a day goes by without some one of my customers making some comment about how perfectly sized and cleaned my material now is. From now on its Simplicity screens for me—the best aggregate screen on the market."

You, too, can insure better cleaned, more accurately sized aggregates by installing a Simplicity Gyrating Screen. Write today for complete facts and prices.



Simplicity

ENGINEERING COMPANY · DURAND MICH.

referred to the Office of Labor of the W.F.A., which coöperates closely with W.M.C. and its U. S. Employment Service in attempting to recruit workers. County and State A.A.A. committees are working through local O.D.T. offices on distribution problems.

North Central Division

LEROY K. SMITH, director of the North Central division, A.A.A., which includes the states of Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Nebraska, Ohio, South Dakota, and Wisconsin reports: The contracts used for the purchase of limestone and other liming materials are source of supply and definite quantity contracts. The majority of our contracts are for definite quantities. Contracts have been awarded for f.o.b. plant, stockpile, delivered to farm, and delivered to farm and spread on field type of deliveries.

The minimum specification for agricultural limestone is as follows:

"AGRICULTURAL GROUND LIMESTONE: (This material must be in bulk and on a 2000-pound ton basis.)

"a. The material must contain 80 percent calcium carbonate equivalent.

"b. The material must be ground sufficiently fine so that 80 percent, including all the finer particles obtained in the grinding process, will pass 8-mesh.

"c. The moisture content at the time of shipment shall not exceed 8 percent.

"Note: One or both specifications for 'a' and 'b' above must be above the minimum so that the multiplication of the percent of calcium carbonate equivalent by the percent of material passing 8-mesh will be equal to or in excess of 0.7200."

The above-mentioned specification applies to all States except Ohio. In Ohio, the specification is the same except that 20 percent of the material must also pass 100-mesh. In certain counties in Ohio, they also purchase finely ground limestone when a sufficient amount of the regular specification material is not available.

Prices in 1944 are slightly higher than in the past. The greater portion of the increase in prices is attributable to the increased charge for transportation by truck. Some producers have established new maximum plant prices through the O.P.A., however, the majority of producers are selling at their 1943 plant prices.

The method of distribution to farms varies by States. For example in Minnesota, the majority of the material is contracted for on a delivered to farmyard basis and farmers arrange for the spreading on field. In Missouri, the major portion of the material is delivered and spread on fields under the contract. In Illinois, the greater part of the tonnage is delivered to farmers at the plant or railhead, and the farmers arrange for their own hauling and spreading.

In view of the shortage of trucks, tires and gasoline, a determined effort has been made by this Region to have farmers provide for their own delivery from the plant or railhead.

The production problem does not appear at this time to be nearly as serious as the distribution phase of the program. The necessity of hiring older men and other inexperienced labor is principally the major problem in production. The critical shortage of trucks, tires, and experienced truck drivers appears to be the principal bottleneck in the over-all picture at the present time.

The A.A.A. and the W.F.A. are leaving no stones unturned in their efforts to solve any problems which are impeding the production and distribution of agricultural limestone. A national limestone industry advisory committee, composed of representatives of the industry from all parts of the country, has been established by the W.F.A. This committee meets periodically in Washington to advise

(Continued on page 110)





In considering the nine cost-cutting, production-increasing plus values of Eagle Screw Washers, remember that they apply equally to Eagle Log Washers and Sand Dewaterers. These Eagle equipments insure the production of premium washed sand and gravel to conform to the most rigid specifications of today and the still higher requirements of tomorrow.

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A.A.A. Program

(Continued from page (109)

the W.F.A. of the problems confronting the industry and suggest methods to be used in solving the problems. Representatives of the A.A.A. and the W.F.A. charged with the responsibility of maintaining the production and distribution of limestone have had excellent coöperation from other agencies such as the W.P.B. and the O.P.A. in their efforts to solve the many production and distribution problems facing the industry during war time.

Conditions in Various States

INDIANA: CLARK L. BAKER, acting chairman, Indiana Agricultural Conservation Committee, reports prices slightly increased over those of 1943, producers having taken advantage of Rule 3 of M.P.R. 386, which permits price increases to take care of increased costs of production and delivery, and where needed, cost of spreading on the fields. Mr. Baker believes that equipment the truckers now have is ample to take care of this year's requirements, provided repair parts and tires are obtainable as the season advances. However, many trucks will have to be replaced by 1945.

The demand in Indiana, according to Mr. Baker, exceeds production, and if these demands for agricultural limestone are to be met, it will be necessary to open new quarries in certain areas and expand production in others. Since demand for commercial crushed stone is expected to be low, he believes production of agricultural limestone can be increased only by conversion of large operations to production of agstone as a primary product. He says quarry operators are not having any great difficulties in getting necessary repair and replacement parts, but that several operators indicate loss of man power to the armed services will hinder production.

According to the contract form furnished as a sample by Mr. Baker, Indiana contracts this year are on a definite quantity basis, but the bidding form which accompanies these contract forms in all the regions has the question (No. 3): "If the contract may exceed $10,000 will you comply with the provisions of the Walsh-Healey Act?" The answer must be "yes" or "no." However, if we are correctly informed, the producer who enters one of these contracts has no option, he is automatically bound by the Walsh-Healey Public Contracts Act and he should be careful not to step into what looks like a trap in answering question No. 3. The contract also includes the same clause quoted in the first part of this article in the description of the contracts in the Northeast division about the application of the 8-hour day law to truck hauling and spreading.

ILLINOIS: From information gathered by a member of ROCK PRODUCTS' staff, agricultural limestone prices in Illinois have increased appreciably by producers taking advantage of Rule 3 of M.P.R. 386, already referred to. The A.A.A. authorities are fully aware of the changed status of the industry, now that stockpiles of screenings have been used up, and producers, particularly the larger operators, will not be able to meet demands unless they convert their plants to making agstone as a prime product.

The larger plants are still pricing their product at about $1.00 per ton, f.o.b. quarry, while the smaller operators, without rail connection and using truck haulage exclusively, get prices ranging from $1.10 to $1.50 or more. No doubt it costs the larger operators, under present conditions, as much or more to produce the product, as it does the small operator, but the larger operators are handicapped in getting comparable prices by their previous low ceiling prices, which were based on agstone as a by-product of commercial stone operation.

At an f.o.b. quarry price of $1.00 the estimated average delivered and spread price to the farmer in 1944 is about $3.20 per ton as against $2.45 in 1941. The Illinois A.A.A. authorities believe that any delivered price in excess of $3.00 per ton makes the soil conservation program lag, although the $3.20 price, they admit, is justified by present farm product prices. The farmers are being encouraged to do their own hauling and spreading and a sharp decline in contract hauling and spreading is anticipated in 1944.

As has been reported in ROCK PRODUCTS before, Illinois producers turned down a request to bid on a definite quantity basis, and in this state operate on the "source of supply" form of contract. The A.A.A. authorities complain, however, that producers have filled orders for farmers, who dealt directly with the producers, at the expense of farmers who placed their orders through A.A.A. Also, some producers take the point of view, that since they are not allowed adequate depletion and depreciation charges, there is no sound reason for exhausting their deposits at present low prices.

A.A.A. Plans for Iowa and Wisconsin

IOWA: H. L. DIETERICH, acting chairman, Iowa Agricultural Conservation Committee, states that he is using the definite quantity contract. Prices, he says, are about the same as in 1943. The major part of the limestone is being contracted for on a delivered and spread basis. The main problem this year, he says, is one of distribution—trucks and tires—and not production. The hauling and spreading is done by contractors, almost exclu-



Portable pipe lines, composed of 20-foot sections easily handled by one man, followed our advancing forces across the desert. The wide range of Naylor Pipe sizes from 4" to 30" in diameter makes this pipe ideal for numerous post-war applications in the mining field.

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PERFORMANCE OF NAYLOR PORTABLE PIPE IN NORTH AFRICAN CAMPAIGN POINTS THE WAY TO POST-WAR MINING APPLICATIONS

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Hundreds of miles of portable pipe, quickly installed over the rough terrain, met the challenge of desert obstacles and these supply lines are credited by the Army with having helped win the victory.

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sively. The producers are doing a good job, he says.

WISCONSIN: WALTER F. KATTERHENRY, chairman, Wisconsin Agricultural Conservation Committee, writes: The definite quantity contract is being used in this state; practically all on the basis of delivery to the farm. Prices vary from $1.50 to $3.75 per ton delivered at the farm, but apparently not spread. By far the bulk of the product, Mr. Katterhenry says, comes from small operators located in the counties where the material is used. Some counties have no limestone deposits and the material has to be shipped in by rail, and in these cases is received mostly by trucking contractors who specialize in this field. About the only equipment such contractors need, other than trucks, is a portable crane and bucket for unloading open-top cars. At least 100 new dump trucks are badly needed now, Mr. Katterhenry says.

MINNESOTA: CHAS. W. STICKNEY, chairman, Minnesota Agricultural Conservation Committee, writes that with two exceptions all contracts are on the source of supply basis; the two are on the definite quantity basis. He says the average 1944 price delivered on the farm is $1.93, which is slightly above last year's price. All contracts are on a delivered-to-farm basis. No bottlenecks in production have developed, but some new equipment is needed. The committee is aiding producers through the A.A.A. office to get this needed equipment. Nearly all producers are said to be doing a good job. Most of the producers in this state operate portable equipment which they move from one quarry to another to reduce haulage to a minimum. The state has a large number of small quarries.

These, Mr. Stickney says, are the necessary steps to secure adequate production and distribution of limestone this year:

"(a) Provide an adequate supply of labor for our contractors.

"(b) Make tires available for necessary replacements.

"(c) Give some assistance in securing the required repair parts.

"(d) Grant priorities for the purchase of a few items of equipment necessary for production."

Farm Yard Agstone Deliveries in Kentucky

KENTUCKY: M. D. ROYSE, chairman, Kentucky Agricultural Conservation Committee, states that the source of supply type of contract is used in his state. Prices this year on an f.o.b. plant basis are 50c to $1.00 for pulverized slag; 50c to $1.50 for limestone; $1.40 to $1.66 for marl; limestone crushed on the farm, $1.25; limestone delivered to the farmyards, $1.70 to $4.00. Except in five out of 120 counties, farmyard deliveries are made; in the five counties farmers take the material at the plants. Where agstone is received by rail, county farm associations arrange to have it trucked to farms, under uniform agreements with truckers. In addition to the usual difficulties already referred to, Kentucky producers complain of delay in getting repair and maintenance items, perhaps because they are unfamiliar with W.P.B. rules that permit advance purchase of anticipated break-down parts.

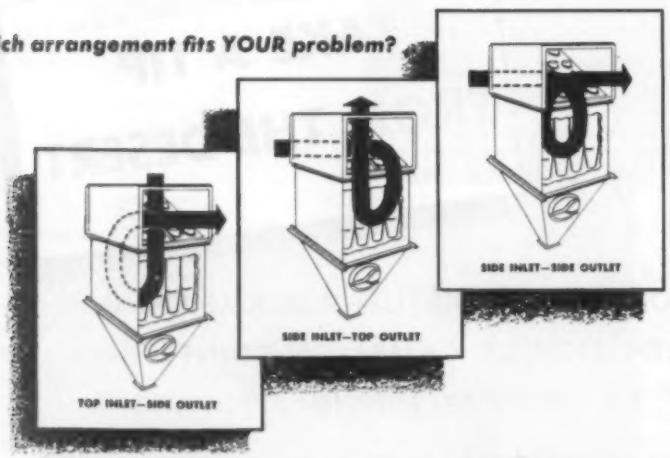
Mr. Royse expects increased production over last year in spite of all the difficulties, which include a below-normal demand for commercial stone. These producers are promising to devote their major energies to increased production of agstone.

Steel Advertises Limestone

IN A RECENT ISSUE of *Iron Age*, the Jones & Laughlin Steel Corporation, Pittsburgh, Penn., had an attractive two-page spread advertisement which paid tribute to the essential part which limestone as a flux plays in the manufacture of steel. The title of the advertisement is "Stone Serves to Make Steel." The advertisement stated that in 1943 thirty million tons of limestone contributed to the production in America of ninety million tons of steel.

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MULTICLONE Collectors for the collection of dust, fly ash and other suspended particles from gases offer *many* basic advantages . . . one of which is their ability to fit into "shoe-horn" spaces—areas too small for other equipment—waste spaces with low headroom or tight side clearances.

Where low headroom is a factor the MULTICLONE can readily be installed with side inlet-side outlet to minimize vertical height. Or where side clearance is a factor, side inlet-top outlet or top inlet-side outlet installations can be made.

In addition, MULTICLONE'S exclusive vane tube eliminates multiple inlet and outlet ducts. Many tubes can be compacted into one unit with only a *single* inlet and outlet header required. Moreover, tubes may be fitted together in various arrangements to fit cramped spaces . . . and only one discharge hopper is required to handle the collected material from an entire bank of tubes—not the conventional separate hopper for each tube.



All these features add up to unusual compactness and adaptability. But the MULTICLONE has many other vital advantages, too. Get the full story on how it is simpler to install, easier to maintain and gives higher efficiency. Send for this booklet!

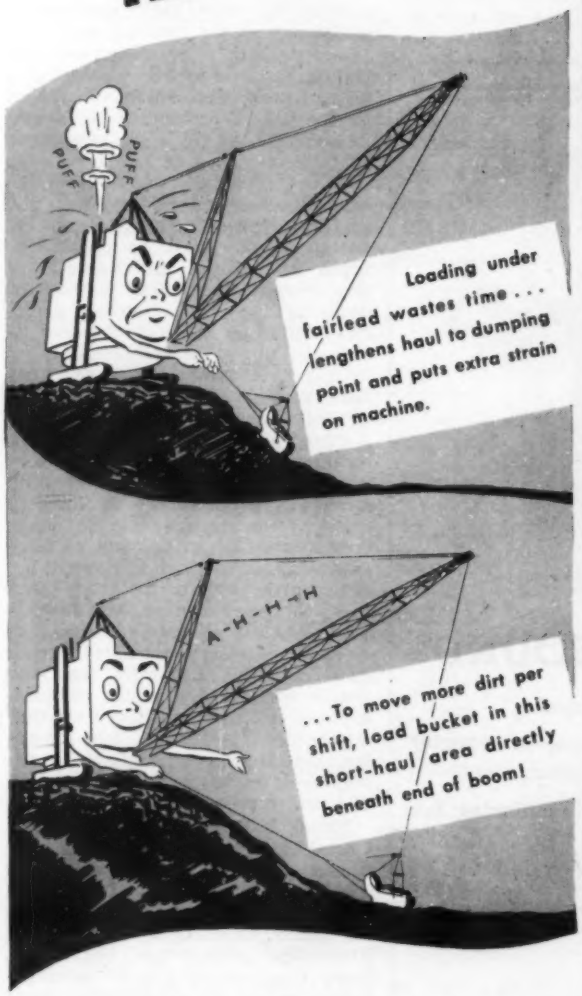
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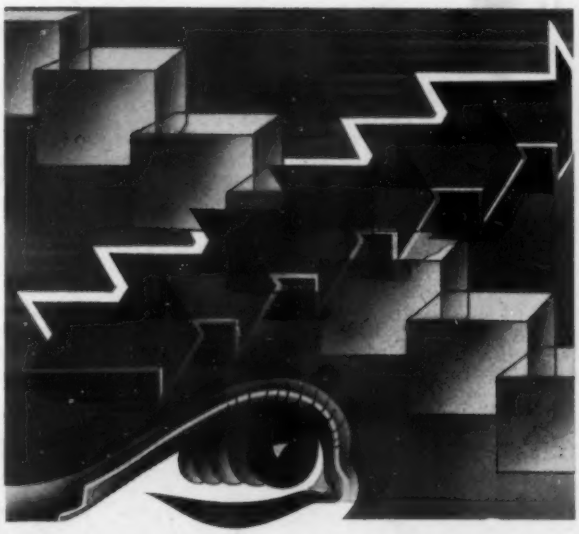
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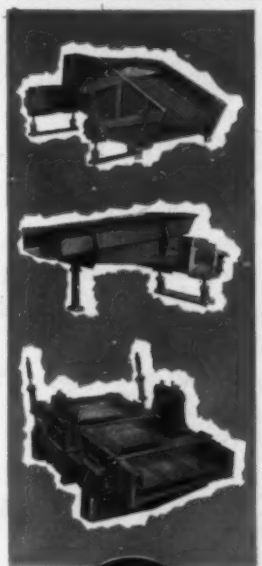
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Air-Entraining Cement Problems

Discussion at recent A.I.C. Convention

SOVEREIGN CURE for all the ills of concrete was the impression one got from the discussion of air-entraining cements at the recent convention of the American Concrete Institute, by representatives of the cement manufacturers. Other researchers and experimenters weren't quite so sure, apparently.

FRANK T. SHEETS, president of the Portland Cement Association, referred to the subject in a luncheon address, saying that the evolution leading to the use of air-entraining cements "provided immunity to the sealing of concrete pavements," and had given "new faith in concrete."

Following the luncheon was a round-table discussion with FRANK H. JACKSON, Public Roads Administration, Washington, D. C., presiding. H. F. GONNERMAN, manager of the research laboratory of the Portland Cement Association, led off with a lengthy report on the result of recent research, both in his laboratory and in the field. Mr. Gonnerman said that both field and laboratory studies proved that admixtures of both vinsol resin and tallow, resulting in air entrapment in the concrete, increased resistance to salts used for thawing ice, and that the strength decrease could be overcome by reducing the amounts of sand and water.

Most of the work done by Mr. Gonnerman was with cements which had been made with the material added to the clinker in grinding. He did not think these air-entraining admixtures were very effective if added dry at the concrete mixer.

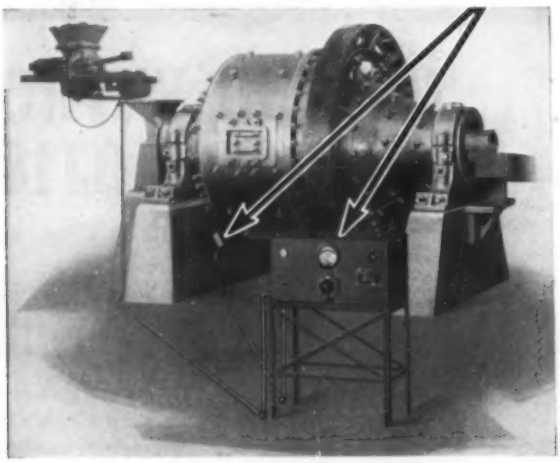
Mr. Jackson commented on Mr Gonnerman's report by stating that he had been represented as opposed to the use of air-entraining agents in concrete, but said he recognized that there was sufficient knowledge now to prove they made pavement concrete resistant to freezing and thawing. However, the amount of entrapped air must be controlled; much depends on the character of the cement used, the method of applying the air-entraining agent, etc. While he thought the loss in strength might be compensated for by increased durability, he didn't believe that the indiscriminate use of air-entraining agents was a cure-all.

Concrete with 3 to 5 percent air entrapment shows appreciable loss of strength, up to 25 percent. Flexural strength, particularly, is lowered. Some of the strength can be recovered by redesign of the mix, in some cases without addition of cement, but some mixes require as much as 7 sacks to the cubic yard. Mr. Jackson was skeptical of the advantage of using air-entraining cements in structural concrete. Evidently they will reduce bond strength with reinforcing steel. He also questioned whether all the benefits derived from air-entraining cements were due to air entrapment; some might be due to use of a water proofing agent.

HENRY L. KENNEDY, Dewey & Almy Chemical Co., Cambridge, Mass., reported results of experiments in his company's cement and concrete laboratory with a variety of air-entraining agents. He brought out some very interesting points, one being that there is a critical size of sand involved in the air entrapment. Sand over 14-mesh size is not effective; the air entrapment is on the finer sizes of sand, and the air bubbles attach themselves to these small particles of sand like ball bearings and act like lubricants. This happens on particles up to 100-mesh size, but not on particles finer than 100-mesh.

With the right sand mixture this effect of increasing workability and preventing segregation is so pronounced that a plain sand and coarse aggregate mixture, without any cement at all, will make a workable batch.

(Continued on page 122)



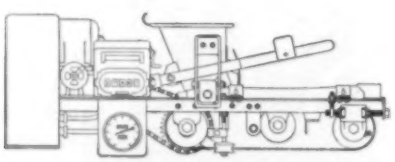
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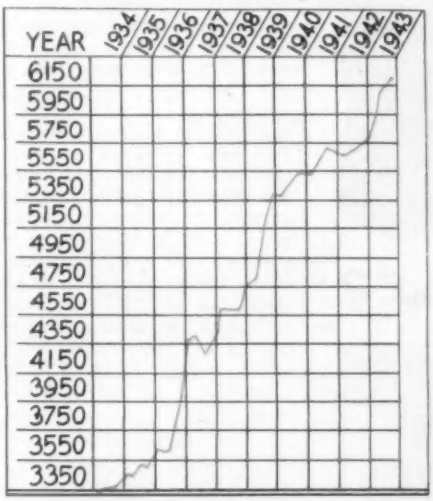
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We Serve the Government as We Serve Industry: with Determination that Our Entire Energies and Resources Shall Help to Win the War

Organize for Post-War Planning

AN INTERESTING OUTLINE of immediate business and post-war markets for the rock products industry is to be found in the recently issued annual report of President Melvin H. Baker to the stockholders of National Gypsum Co., Buffalo, N. Y.

Summarizing present production activities of the company, President Baker said, "During the year the organization exploited every possibility to adapt peacetime products to wartime use and to increase production of war materials.

"The metal lath plant operated at high capacity in turning out landing mats for emergency air fields so indispensable to the allied forces. Production this year will be stepped-up even more to keep pace with an increase in Government needs.

"The three lime mills operated at full capacity to supply metal and chemical manufacturers of vital war materials, and it is expected that this business will continue at high level until the war ends.

"The gypsum board and fibre insulation board units were taxed to the limit of available manpower, but because of labor shortage these plants were able to operate at only about 80 percent of their capacities. Based on present indications of Government requirements a larger part of the output of these products will be available for civilian business after the Spring months. It has not been possible to develop any large wartime use for plaster, and consequently the gypsum plaster mills ran only about 30 percent of their capacities.

Rock Wool Operations

"All three rock wool operations were kept at high level despite manpower shortages. Prospects for continued demand for this type of insulation promise to tax facilities at these plants for duration of the war.

"There has been a noticeable reduction in volume of Government orders for certain of the company's products, which may indicate that the high peak of Government requirements has passed."

Turning to the part research and planning will have on post-war business, President Baker said that during 1943 eight new patents covering processes in the manufacture of paper and gypsum wallboard were filed, and two new products were developed. One is a low-cost acoustical tile that provides high sound absorption and certain decorative advantages. Another is an improved type of waterproofed rock wool for home insulation. A post-war Planning Department was set up for development of new products, engineering, plant additions and markets. This is in charge of a manager with competent staff experienced in both production and sales.

Looking Ahead

Looking ahead to the end of the war, President Baker said, "Until the war has been won this company's facilities will be used for military needs wherever possible. However, indications are that production for war is becoming more selective and in some instances has caught up with demand. Any further curtailment will undoubtedly be followed by gradual conversion to peacetime activities." He said that a conservative forecast indicates an immediate need for new building in excess of peak construction which followed the last war. The following seems to justify that reasoning: Reliable surveys show a grave shortage of homes in this country due to accruals from under-building in the decade following 1930, the suspension of private building since 1941, and the neglect of necessary repairs for all classes of buildings. When the boys return from military service, thousands of them will want homes to provide for new families, as a result of more than two million marriages already since the war began."

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You can safely bet your family's ration books that Maine farmers will remember it with pride—and for many years to come! Fighting food . . . spuds by the millions of barrels! A Victory crop so enormous that unprecedented measures had to be taken to harvest it and keep it secure against Winter. And, mister, *THAT'S WHERE GENERAL EXCAVATOR SHOVELS ENTERED THE PICTURE IN A BIG WAY.*

General power shovels helped to revive the old method of pit storage (huge pits dug in the earth) in order to save the crop. This was necessary because there were millions of bushels yet to store after every available foot of inside storage space was taken. The crop was saved . . . another vital Victory job completed! We hope as Maine goes, so will go the rations!



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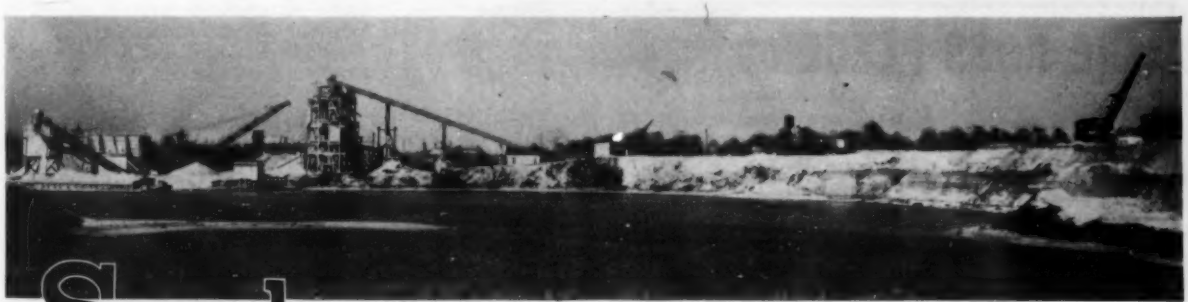
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Chemist Corner

(Continued on page 93)

the normal consistency of portland cement, due to the fact that portland cement is not plastic and consequently the Vicat needle sinks more rapidly into the paste. Cements of the Atoyac type, on the other hand, are very plastic and gluey, and the Vicat needle, unless an excess of water has been used, will not penetrate properly. The "blended" cements containing slags and volcanic materials act similar to portland cements in this connection, while other types of cements, particularly those using siliceous materials with high insoluble residue contents, act in the manner I have outlined.

My experience, as concerns normal consistency, and regardless as to the type of cement, has always been to the end that the Ball test is the more reliable of all tests for determining the normal consistency of cement, and the Gilmore needle is far more satisfactory than the Vicat needle. In fairness to a variety of cements that may come under the proposed specifications, I think that the Gilmore needle should be given the same place and importance in the specifications covering method of determining the time of set of "blended" and "processed" cements, as it is given in the specifications covering tests for portland cements. I personally do not see the necessity of these variations in method of test of time of set of "blended" cements from the standard test covering time of set of portland cements.

Specification for Materials

The reference to limes takes in only those covering caustic and hydrated limes as covered by A.S.T.M. specifications C-5-26 and C-6-31, and the use of natural cement as covered by A.S.T.M. specification C-10-09. In view of the fact that the latter specification does not go into detail as concerns the chemical composition or limits for natural cements, I am wondering if calcined cement-rock or stone of a similar nature is to be considered as covered in the latter specification. We have produced Atoyac cement here from cement-rock in which the calcium carbonate content ranged from 55 to 80%, and in the experiments carried out by my father at a portland cement plant in the East, he successfully used cement-rock screenings that averaged about 65% calcium carbonate, producing a "processed" cement having higher strength properties than the standard portland cement produced there. In glancing through his test data I find that he used a mixture composed of 50% clay with 25% of semi-calcined cement-rock screenings and 25% of hard burnt cement-rock screenings, and after hydration ground in 80%

of the standard portland cement clinker. Strengths of 227 lbs. were received at 1 day on 1:3 sand briquettes; 358 lbs. in 3 days; 402 lbs. in 7 days, and 493 lbs. at 28 days., although fineness was only 85.8% through 200 mesh screen.

This cement was considerably higher in strength than the standard portland cement produced in the plant in question, though having similar setting times. In case cement-rock is not included in the present proposed specifications, I believe that it would be well to do so since in some sections where high calcium lime is not available, cement-rock lime is an essential as well as an advantageous material.

Under date of October 20, 1941, at Allentown, Pa., Committee C-1 was asked to adopt the tentative standards, but upon vote, the specification was unanimously defeated.

Abstracts are herewith made from a letter received from the Blended Cement Committee, under date of November 22, 1941: —

"We asked Committee C-1 to adopt the specification as a tentative standard. After considerable argument on this subject a vote was taken and it was almost unanimously defeated. They have asked us to develop a test for pozzolanic activity and make some long time tests, trying to determine some short methods which we can use in drafting a new specification. As it looks now, it will be at least a couple of years before we are able to again present a specification on Portland-Pozzolan cement. Later on in November we will hold a meeting and try to arrive at a method of procedure in lining up this research work. Any suggestions you have regarding this will be appreciated."

From the above it would appear that were there an honest intention on the part of all concerned to have a specification to cover "blended," "processed" or "Portland-Pozzolan" cements, such specifications could be arrived at in somewhat under the years they have been discussed. It is of interest to note the U. S. Federal Specification for Portland-Pozzolan cement, SS-C-208, issued in September 23, 1938. It might very well serve as the basis for an A.S.T.M. specification, and could readily be adopted, if such a specification is really desired, and be revised from time to time as in the case of other cement specifications.

At the first meeting of the American Society for Testing Materials, June 1902, a committee was appointed to develop a specification for portland cement. This committee assembled October 30, 1902, and made a progress report January 21, 1903, and on February 4, 1903, the committee on Standard Specification for Cement of the A.S.T.M., adopted

(Continued on page 120)

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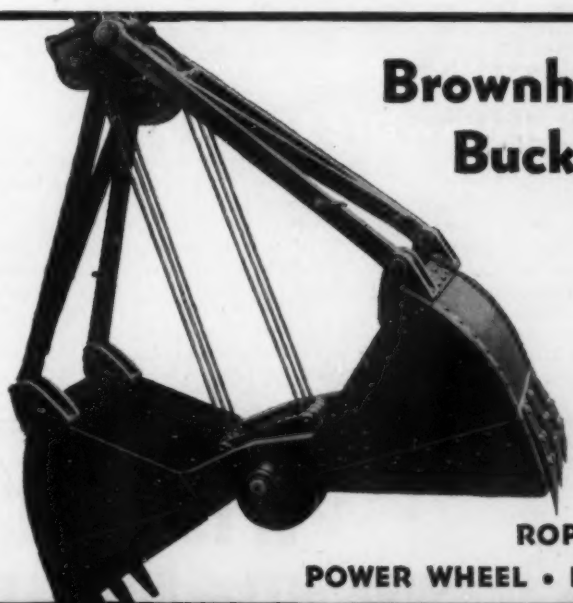
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Chemist Corner

(Continued from page 119)

the report as a basis for its work. The Tentative Specification was presented and considered on December 3, 1903, approved March 29, 1904, and adopted by letter ballot of the committee June 11, 1904, and approved by letter ballot of the Society, November 14, 1904. So, in about two and a half years it was possible to draw up a specification for portland cements, yet in over ten years it has not been possible to arrive at even a tentative standard for cements of the portland-pozzolan types. It is true that the portland cement specification has been revised from time to time, the first revision being in 1908, the second in 1909, the third in 1916, the fourth in 1921. Did there exist a provisional or tentative specification for portland-pozzolan cements in the A.S.T.M., this specification also might be revised from time to time, instead of being held back at the insistence of allied interests who have done everything possible to delay such a specification.

Of more recent date, during September of 1943, the Dirección General de Normas de la Secretaría de la Economía Nacional (which corresponds to the U. S. Bureau of Standards) invited all cement producers and consumers to draw up a specification to cover portland-pozzolan types of cements, and during the month of October, 1943, specifications covering three types of portland-pozzolan cements were approved, as follows:—

Specification for Portland-Pozzolan Cements

I. Definition and Generalities

A.—Portland-pozzolan cement is a product obtained by grinding simultaneously portland cement with natural or artificial pozzolanas. During the simultaneous grinding of these materials there is also permitted an addition of hydrated lime in amounts that do not exceed 10% of the total, and of other materials that do not exceed 1% of the total, nor have an injurious effect upon the ultimate quality of the cement.

Pozzolan materials are understood as being those composed principally of acid or oxide silicas and calcium, which in the presence of water at normal temperatures are capable of reacting with calcium hydroxide to form cementitious components.

B.—*Applications or Uses*

These cements may be used in concretes, reinforced concretes, as mortars and plasters of general character, in which a slowness of hardening and acquiring its maximum strength, and a major contraction upon ageing do not constitute a disadvantage. This refers to portland-pozzolan cements Types "A" and "B."

II. Characteristics and Classification

As a result of these standards, portland-pozzolan cements will be considered and classified as being of three types:

Type "A"—For general uses.

Type "B"—When a high resistance to the action of sulfates is desired, and,

Type "C"—When high initial strength is desired.

B.—*Specifications.*

PHYSICAL SPECIFICATIONS

Type	"A"	"B"	"C"
Fineness, retained on No. 200 mesh. Maximum allowable %	13	13	13
Autoclave Accelerated Test.			
Maximum allowable expansion %	1.0	1.0	1.0
Maximum allowable contraction %	0.2	0.2	0.2
Expansion test at atmospheric pressure	Satisfactory	Satisfactory	Satisfactory
Initial setting time, Gilmore Needle. Minimum in minutes	90	90	60
Final setting time, Gilmore Needle. Maximum in hours	10	10	10
Expansion in accelerated test of resistance to action of sulfates. Maximum allowable %	..	0.10	..
Compressive strength. Resistance of 5 cm. cubes of mortar 1:2.77 in kilos per square centimeter at 3 days, minimum strength	35	..	50
At 7 days, minimum strength	70	60	100
At 28 days, minimum strength	150	150	150

NOTE: Type "C" Portland-Pozzolan cement is covered by the same physical specification as is Standard Portland Cement with the following exceptions:

Portland-pozzolan cements must meet the following chemical and physical specifications below expressed:

CHEMICAL SPECIFICATIONS

Type	"A"	"B"	"C"
Silica Oxide (SiO_2) Minimum allowable %	26	26	26
Sulfuric Anhydride (SO_3). Maximum allowable %	2.5	2.5	2.5
Loss on Ignition. Maximum allowable %	7	7	7
Calcium Oxide (CaO) Maximum allowable %	58	58	58
Magnesia Oxide (MgO). Maximum allowable %	4	4	4
Alkalis. Maximum allowable %	1.2	0.9	1

1. The five types of portland cement covered in the new Mexican specifications are required to have surface areas of 1,300 to 1,400, whereas the portland-pozzolan cements are required to have no more than 13% residue retained on the No. 200 mesh screen.

2. The five types of portland cement have specifications covering



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tensile strengths, whereas the portland-pozzolan cements are not required to pass tensile strength specifications.

3. The five types of portland cement have specifications covering compressive strength, and in such cases where compressive strength has not been determined, tensile strengths will be the governing factor.

It is of interest to note that the Mexican specifications as concerns compressive strength requirements for standard portland cement, are identical with those compressive strength specifications for the Type "C" portland-pozzolan cement.

In the case of standard portland cement as well as with the portland-pozzolan cement, in such cases where the autoclave test is not made, the standard steam or boil test will govern as concerns soundness.

At the present time, and although a great many new cement factories are projected for Mexico, there are seven factories in operation that are producing portland cements exclusively, and two factories that are producing portland-pozzolan cements exclusively.

It is of further interest to note that in Mexico only a few months of meetings of Government department heads with producers and consumers was required to work out a specification for portland-pozzolan cements, whereas the large Committee on portland-pozzolan cements in the States, sub to Committee C-1 of the American Society for Testing Materials, after long years, has been unable to arrive at a specification to cover this type cement, notwithstanding the fact that U. S. Federal Specification SS-C-208a has been in effect since May 1, 1942.

It is to be hoped that the example set by Mexico in the matter of specifications to cover portland-pozzolan cements will be rapidly followed by Committee C-1 of the A.S.T.M.

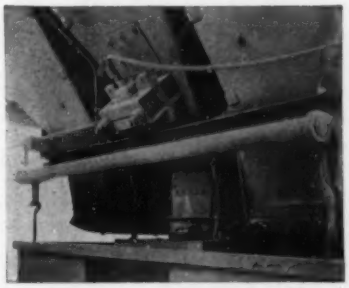
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Air-Entraining Cements

(Continued from page 114)

H. S. MEISSNER, U. S. Bureau of Reclamation, Denver, Colo., suggested that the use of air-entraining agents had been helpful in the case of sulphate-resisting cements.

MYRON A. SWAYZE, director of research, Lone Star Cement Co., Hudson, N. Y., said that it would have to be taken for granted now that air-entraining improves cements. One difficulty is the variation in results with different brands of cement. He thought the U. S. Army Engineers are going to require a performance test of the air-entraining properties of a cement. The most consistent results he thought would follow the practice of adding the air-entraining agent as an alkali solution at the concrete mixer.

Mr. Swayze, in speaking of the advantages of air-entraining cements, said he was confining his remarks to pavement concrete. He doubted the adaptability of these cements to lean mixtures for structural concrete. As to ready-mixed concrete, one must revise his recommendations, or be liberal in reading specifications. Mr. Swayze concluded by saying that he did not believe air-entraining cements are a cure-all, that there were other things to keep in mind.

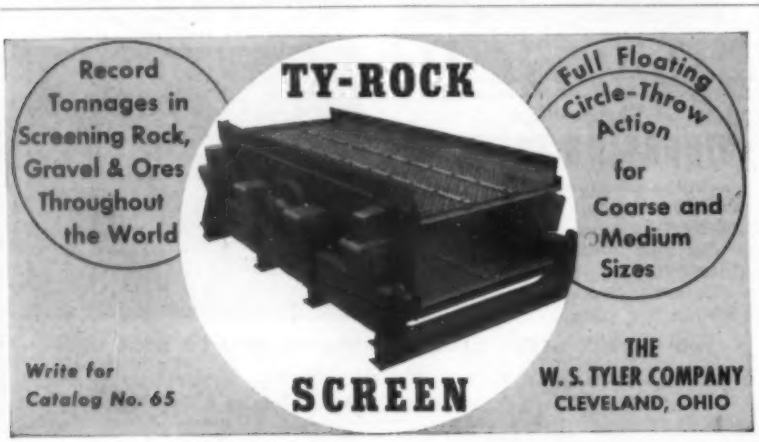
DONALD MACPHERSON, acting director of research, Master Builders' Research Laboratories, Cleveland, Ohio, argued that the best way to use air-entraining admixtures was at the mixer on the job, so that the field engineer would have full control of the results. He classified such admixtures into two groups (1) fatty or resinous materials; (2) water soluble saponification foaming agents. Failure to distinguish between them sometimes accounts for variations in results. He thought something more than entraining air is an objective.

G. L. LINDSAY, assistant director of tests and research, Universal Atlas Cement Co., New York City, said he had been able to achieve cement-plant control of air entrainment, but it depended on a single plant laboratory and was not developed enough to apply in other laboratories with other cements. Results can not be achieved by adding dry material, it must be added in solution. He had had six years' experience on a large tonnage of cement with consistent results. He had not used a fixed amount of air-entraining materials, but varied the amount to get a desired amount of entrapped air when the cement was used in the field. He had developed a mortar test as a control.

Mr. Lindsay said that lower strengths did not necessarily follow use of air-entraining cements. The air bubbles take the place of fine aggregate and in lean mixes an actual increase in strength is possible because of the reduction in water-cement ratio. He is convinced that air-entraining cement is a real contribution to the industry.

H. F. THOMSON, General Material Co., St. Louis, Mo., speaking as a ready-mixed concrete manufacturer, pointed out that the use of air-entraining cements was a curious reversal of previous theory, which required that transit mixers not entrain any air. He said there was no question of an increase in plasticity, an increase in slump, which allowed a reduction in the mixing water. Different brands of cement give different results and there are other variables.

STANTON WALKER, director of engineering, National Sand and Gravel Association, Washington, D. C., spoke from the ready-mixed concrete manufacturers' point of view, telling of several examples of excessive air entrainment and resultant excessive loss in strength. He said there may be differences in the air-entraining materials used. Answers to some of these questions now are inadequate and there is need of more research. He pointed out the concrete manufacturer must know in advance how much air is to be entrained before he can redesign his mix. He said a fundamental consideration is that a gallon of entrained air in a concrete mix apparently served the same purpose as a gallon of fluid (water).



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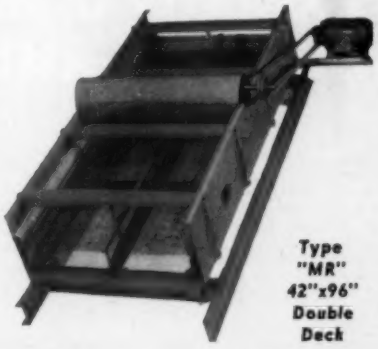
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Lehigh Portland Cement Co. cv. pfd.....	1.00	Apr. 1
Pacific Coast Aggregates, Inc.	.03	Mar. 20
Pacific Portland Cement Co., pfd.	1.00	Apr. 29
Pennsylvania Glass Sand Corp.	.25	Apr. 1
Pennsylvania Glass Sand Corp. pfd.....	1.25	Apr. 1
Superior Portland Cement Co., $3.30 A.....	$0.82½	Apr. 1

•

KANSAS CITY CRUSHED STONE CO., Kansas City, Mo., reported an abnormally large business in 1943, but expects a reduced amount in 1944 with a small construction volume. Sales totaled $575,328. Gross profit was $102,871, but net income, after depreciation of $40,203 and income taxes of $19,818, totaled $28,864. Current assets on December 31 were $121,999; current liabilities, $43,011. Total assets were $235,236.

•

MEDUSA PORTLAND CEMENT CO., Cleveland, Ohio, had a net income of $59,224 for the year ended December 31, 1943, as compared with $535,426 for the previous year. Last October the company redeemed $220,000 of maturing bank notes and the $220,000 balance of the long term was retired on March 1, 1944.

•

SANTA CRUZ PORTAND CEMENT CO., has acquired nearly a 10 percent interest in Pacific Coast Aggregates, Inc., San Francisco, Calif., one of the largest producers of aggregates and ready mixed concrete in the State.

•

SOUTHERN PHOSPHATE CORPORATION, Baltimore, Md., reports a net income of $106,409, after charges and taxes, for the year ended December 31, 1943. This compares with $100,287 for the same period in 1942.

•

IDEAL CEMENT CO., Denver, Colo., presented the following income account for the years ended December 31:

	1943	1942
Operating profit ...	$4,879,546	$6,092,474
Deprec. & depletion	570,423	563,156
Income taxes	1,452,019	1,525,318
Excess profits tax..	829,129	1,932,984
Post-war tax cred..	cr82,913	cr193,295
Post-war conting...	100,000	.....
Net income	2,010,888	2,264,311
Dividends	2,104,455	2,375,998
Deficit for year....	93,567	111,687
Earn. surplus, 1-1..	3,085,468	3,197,155
Earn. surpl., 12-31.	2,991,901	3,085,468
Earned per share..	$1.48	$1.66
Number of shares..	1,357,713	1,357,713

•

NORTH AMERICAN CEMENT CORPORATION, New York, N. Y., reported a net loss of $400,256 for the year ended December 31, 1943 as compared with a net profit of $15,604 for the year ended December 31. Net sales during 1943 were $3,620,082. This compares with $4,900,645 for 1942.

•

MARBLEHEAD LIME CO., Chicago, Ill., under a supplemental indenture, dated Sept. 21, 1942, company's 1st 7s, due Jan. 1, 1944, have been extended to Jan. 1, 1954, at 4½ percent. Bonds were payable at 106 percent of face value on Jan. 1, 1944. Under extension agreement the 6 percent premium was paid to holders who deposited their bonds in 4½ percent promissory notes of company, dated Jan. 1, 1944, due Jan. 1, 1946. Extended bonds are redeemable at par and interest plus ½ of 1 percent for each year or fraction thereof the unexpired life of bonds redeemed. A sinking fund for retirement of the bonds has been created under the supplemental indenture.

BLUE DIAMOND CORPORATION, Los Angeles, Calif., reported the following income account for the years ended December 31:

	1943	1942
Net sales	$3,946,833	$7,362,683
Costs & expenses..	3,235,077	6,188,847
Selling & adm. expense	412,257	431,265
Operating profit ..	299,499	742,571
Other income	18,279	3,691
Total income	317,778	746,262
Interest, etc.	17,536	24,254
Pr. yr. reneg., net..	[1]9,500	.....
Fed. income tax...	100,333	122,000
Excess prof. tax....	.....	375,500
Debt retire. cred....	.....	cr33,500
Post-war tax cred..	.....	cr4,000
Net income	190,409	[2]262,008
Dividends	109,397	72,931
Surplus for year...	81,012	189,077
Surplus, Jan. 1....	876,361	687,284
Surplus, Dec. 31...	957,373	876,361
Earned per share..	$0.26	[2]$0.36
Number of shares..	729,313	729,313

[1] After deducting $40,500 Federal income taxes thereon.

[2] Revised net income after renegotiation was $252,508 or $0.35 per share.

•

GYPSUM, LIME & ALABASTINE, CANADA, LTD., Toronto, Ont., presented the following consolidated income account for the years ended November 30:

	1943	1942
Operating profit....	$1,037,048	$1,239,459
Executive salaries, etc.	32,629	30,316
Directors' fees	11,267	11,767
Deprec. & deplet...	298,369	309,609
Net oper. profit....	694,783	887,767
Other income	12,000	4,362
Total income	706,783	892,129
Funded debt int...	155,158	167,014
Inc. & prof. tax....	354,000	496,000
Exc. prof. tax ref..	cr38,000	cr28,639
Net profit	235,625	263,754
Previous surplus...	1,004,935	810,066
Write-offs	.....	68,885
Surplus, Nov. 30...	1,240,560	1,004,935
[1]Times int. earn...	4.56	5.34
Earned per share..	$0.53	$0.60
No. of shares.....	440,043	440,043

[1] Before income and excess profits taxes.

(Continued on page 126)



PERFORMANCE
Packed with POWER

Abundant power with means of applying it efficiently to every need, is a feature of both U.S. aircraft and Owen Buckets.
In Owen Buckets power may be utilized with most efficient performance in every situation through adjustable counterweights and adjustable reeving. Investigate

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6040 BREAKWATER AVE., CLEVELAND, O.
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- 99% Through 325 Mesh
- 25% to 30% greater recovery of fines.
- Not affected by variation in speed or rate of feed.



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SCREENING VITAL ORES *the LINK-BELT Way*





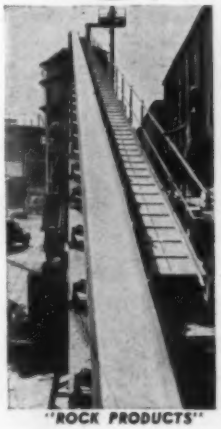
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WRITE TODAY! *LINK-BELT Vibrating Screens*

INDUSTRIAL So-Lo *REPAIRS RUBBER*





"ROCK PRODUCTS"

PROLONGS LIFE OF CONVEYOR BELTS . . . RESURFACES PULLEYS . . . PATCHES RUBBER BOOTS, GLOVES, ETC.

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Wide range of other uses. Resurfaces pulleys—metal, wood, composition. Repairs rubber boots and gloves. Makes metal or concrete stair treads slip-proof, lessening accidents. Also effective for insulating switch handles, foot grips, and other electrical devices.

JUST SPREAD ON— DRIES TOUGH OVERNIGHT

Easy to use. No special tools. Just spread it on to desired thickness—overnight it "air vulcanizes." Waterproof—acidproof — oil and grease resistant. Dries smooth and flexible—tough as rubber.

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So-Lo Works, Inc.

LOVELAND, OHIO



FOR BETTER LIME AND MARL SPREADING

Use the NEW LEADER Truck-Body Type Lime Spreaders . . .

GOOD NEWS!

●

You can now buy NEW LEADER Truck Body Type Lime Spreaders without Triple AAA Certificates or Priorities.

These spreaders have all the characteristics required for profit-making spreading. They embody the latest spreading improvements. The extra-heavy-duty pintle type conveyor chain gives positive-feed for self-unloading. Will spread wet or dry lime uniformly from 35 to 45 ft. in width. Of heavy construction and reinforcement, they are built to stand hard usage.

Write today for our latest catalog showing the new model Wide Bottom, equipped with two distributor discs. This spreader will handle wet lime and marl and is strictly a one-man spreader.

HIGHWAY EQUIPMENT COMPANY, INC.

Manufacturers of the World's Most Complete Line of Spreaders, including Lime Spreaders, Sand and Cinder Spreaders, Chip Rock, Clay and Dirt Spreaders.

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Quickly Set Up for Operation at the Most Advantageous Location

The Johnson Porto-Batcher is a complete highway portable batching plant. Its use permits these substantial time and money savings:

1. The Johnson Porto-Batcher can be towed behind a truck to the most advantageous point in the pouring area. **2.** Since the Porto-Batcher is quickly set up for operation, long hauls of mixed concrete are eliminated . . . the number of mixing units is reduced and the number of concrete yard-miles lessened. Control of all operations is centralized. **3.** All materials are delivered to the batching unit in bulk material trucks . . . eliminating extra handling equipment. **4.** The Johnson patented charging skip permits full utilization of mixer capacity. By providing proper intermingling of aggregates with cement when discharged into mixer, it assures pre-mixing and pre-shrinkage . . . prevents cement from touching wet mixer opening and walls thus eliminates gumming and excessive wear. **5.** All levers are grouped in one central location to permit control of operations by one man. Write for bulletin.

Write for data on Ready Mix Plant • Bulk Cement Handling Equipment • Cement Storage Bins • Concrete Buckets • Batchers



The C. S. Johnson Company
Champaign, Illinois

Financial

(Continued from page 124)

CONSOLIDATED ROCK PRODUCTS CO., Los Angeles, Calif., will effect a reorganization of the company's financial structure. The plan for reorganization as approved October 25, 1943, has been confirmed by U. S. District Judge Harry A. Halzer. Under the plan, the company will have a simplified stock structure with only two classes of securities outstanding:

$2,944,000 of new first mortgage bonds to be dated May 1, 1942, and to bear 3 percent fixed interest and an additional 2 percent cumulative income interest, and approximately 3,197,000 shares of common stock, $1 par value.

Holders of the present bonds, issued by Union Rock Co. and Consumers Rock & Gravel Co., Inc., will receive all the new bonds and 80 percent of the new stock. Holders of the preferred stock of Consolidated Rock Products Co. will receive the remaining 20 percent of the stock. Holders of present common stock are entitled to no participation under the plan.

For each $1,000 principal amount bondholders will be entitled to a new $1,000 bond, from 882 to 892 shares of new stock, depending upon the amount of accrued interest on the old bonds, and approximately $65 in cash, representing interest on the new bonds since May 1, 1942. For each 100 shares of preferred stock now outstanding, holders will receive approximately 223 shares of new stock.

Under the plan dividends are not to be paid on the new stock until the new bonds have been reduced to $1,250,000. Until that time all net income is to be applied to interest or retirement of the new bonds.

•

SCHUMACHER WALL BOARD CORPORATION, Los Angeles, Calif., had a net income of $111,539 for the nine months ended January 31, 1944. This compares with $113,812 for a like period ended January 31, 1943.

ALPHA PORTLAND CEMENT CO., Easton, Penn., showed the following income account for the years ended December 31:

	1943	1942
Net sales	$6,400,122	$10,814,711
Oper. expenses	4,629,167	6,645,780
Maint. & repairs	760,796	1,159,738
Deprec. & deplet.	800,687	978,972
Operating profit	209,471	2,030,222
Other income	93,278	77,016
Total income	302,749	2,107,238
Income charges	64,519	32,870
[1]Fed. income tax	100,000	822,511
War conting. res.	.....	200,000
Net income	138,230	1,051,857
Common divs.	591,356	951,135
Surplus for year	d 453,126	100,722
[2]Surplus, Jan. 1	3,523,740	3,423,018
Pr. yrs. deprec. adj.	cr 513,763	.....
[3]Debits	678,114	.....
Surplus, Dec. 31	2,906,264	[2]3,523,740

[1]No liability incurred for excess profits taxes.

[2]Includes capital surplus.

[3]Additional Federal income and profits taxes for prior years, less related claims for refund, $183,059; transfer to capital surplus of credit arising from retirement of capital stock in prior years, $495,055; total, $678,114.

•

LEHIGH PORTLAND CEMENT CO., Allentown, Penn., had a net profit of $1,667,223 for the year ended December 31, 1943, after all charges and taxes. This compares with a net profit of $1,943,739 for the year ended December 31, 1942.

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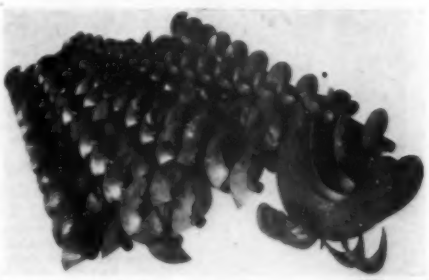
PACIFIC COAST AGGREGATES, INC., San Francisco, Calif., has presented the following income account for the years ended December 31:

	1943	1942
Sales rev.	$6,029,481	$6,103,075
Cost of sales	4,825,047	4,444,762
Sell., etc., expense	463,204	434,903
Depletion	40,391	45,748
Depreciation	239,761	265,275
Operating profit	461,078	912,387
Other income	100,638	180,821
Total income	561,716	1,093,208
Interest	1,322	4,606
Other deductions	11,962	4,693
Fed. income tax	219,703	463,529
Conting. reserve	.....	75,000
Net income	328,729	545,380
Dividends	166,717	207,507
Surplus for year	162,012	337,873
Surplus, Jan. 1	651,631	313,758
Earn. surp., 12-31	813,643	651,631
Earn., com. share	$0.59	$0.98
No. of com. shs.	555,947	556,265

Note: Renegotiation proceedings for year 1942 resulted in no refund considered necessary.

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Screw Conveyors Any Size and Gauge. Welded Elevator Buckets All Sizes, Storage Bins, Bin Gates Special Designs. Tanks, Pressure and Storage, Plate and Sheet Metal Specialties of Steel, Copper, Stainless Steel, and Aluminum.



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Almost Any Job of Concrete Can be Done Faster with JAEGER TRUCK MIXERS



"HIGH DUMP"

Millions of yards of Jaeger Truck-Mixed Concrete on major war work (exceeding the output of all other makes combined) prove the advantages of these motorized concrete plants. Nimble, flexible and fast, they speed placement, solve problem of extended or continuous pours.

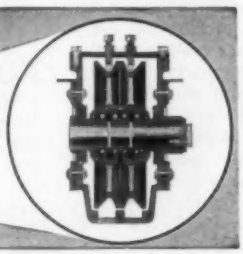
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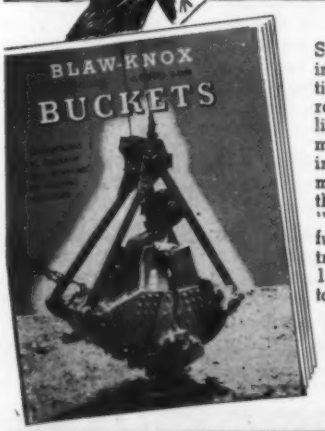
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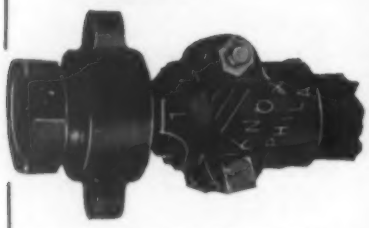
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SPROCKETS FOR ROLLER OR SILENT CHAIN
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Recognized Universally as the ULTIMATE in Valves and Couplings

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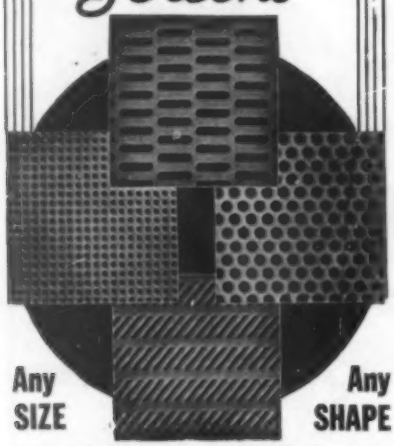
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Any SIZE Any SHAPE

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Excellent material and workmanship for good screening results.

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Building Material Price Trends

"UNLESS the Nation is plunged into a disastrous postwar depression, which all planners are seeking to avoid, the great group of building materials may expect reasonable stability in view of the extensive anticipated program of building, highway construction, and public works," says Information Circular 7265, issued by the Bureau of Mines. The circular reports a study of consumption trends and prices of building materials. The study is confined to cement, crushed stone, sand and gravel, building stone, roofing slate, building lime, and gypsum for the years 1910 to 1942 inclusive.

The consumption of cement has been accelerated by the present war. Enormous quantities of cement have been needed to construct numerous large airfields, fortifications, munition plants, and shipyards. Consumption has advanced to unprecedented levels. This is the more remarkable in view of the drop to an extremely low point, particularly in 1942, of all types of peace-time construction.

"Factory prices for cement have not varied greatly," according to the circular, "Aside from the abnormally high price of 1920 and the low levels of the depression period, they have shown only moderate fluctuations for the past 25 years.

"The relation of price levels to cost of manufacture is of special interest. Certain elements that have tended to increase the cost of production are: exhaustion of the more readily available raw materials requiring deeper quarrying, underground mining, and in some operations longer haul; demands for special cements and increasing rigidity of specifications which call for special preparation of raw materials, close control both of composition and calcination, and finer grinding. The higher cost elements are offset by important economies that have been perfected; increased mechanization, which has led to a larger and larger output per man-hour, and a striking increase in fuel efficiency. These opposing elements so nearly balance that prices for the past 9 years have fallen within the narrow range of $1.45 and $1.54 per barrel, with an average of $1.49."

In commenting on crushed stone prices the circular has this to say: "Prices of crushed stone were stabilized at about 60c a ton until the inflationary period at the close of the World War of 1914-18, when they increased and reached an all-time high of $1.26 a ton in 1920, the year of runaway commodity prices. From 1922 to 1930 they ranged from $1.01 to $1.09 and thereafter the average selling price generally kept between 90c and $1.00 a ton."

Consumption of sand and gravel increased more than fourfold during the 33-year period covered by the report. The requirements for 1942 exceeded 300 million tons.

"Average prices of sand and gravel fluctuate considerably from year to year, but the changes during recent years are more apparent than real, because the average figures are a composite of commercial and noncommercial production," quotes the circular. Noncommercial production attained increasing importance from the early 1930's when the Government took active steps to relieve unemployment. From 1932 to 1940 it constituted 30 to 40 percent of total production. Producers were non-profit organizations, had no taxes to pay, and made little provision for amortization of property or equipment. For these reasons the average value of non-commercial production per ton was always much lower than that of the commercial output, and whenever the noncommercial constituted a large share of the total it tended to depress the average realization per ton, as shown in the price tables in the circular.

The year 1942 was the worst in the recorded history of the building stone industry. Consumption was less than one-fifth of that in 1929. "An era of public building construction will undoubtedly return; but although natural stone is among the most dignified, permanent, and beautiful of all building materials, the extent to which it will regain its former prominence is problematical," observes the circular, "Prefabricated structural units and synthetic building materials are growing in popularity. They can be manufactured by mass production methods and can be speedily erected at relatively low cost, whereas natural stone requires careful selection and laborious processes of quarrying and manufacture. Future prosperity will depend largely in the development of economies in fabrication and on the successful outcome of efforts directed toward establishing wider recognition of the superior qualities of stone."

Roofing slate, building lime, and gypsum come in for their share in the analysis.

Requests for copies of Information Circular, 7265, containing tables of production and prices of these building materials should be addressed to the Bureau of Mines, U. S. Department of the Interior, Washington, D. C.

•

OREGON PORTLAND CEMENT CO., Portland, Ore., reported a net profit of $133,773 for the year ended December 31, 1943, as compared with a net income of $132,977 for the year ended December 31, 1942.

You Get Product Uniformity



Perforated plates provide rigidly maintained uniformity of mesh for your vibrating and shaking screens.

Too, they provide an exact choice of the mesh shape—round, square, squaround, hexagonal, rectangular, slotted, oval, tapered—that best suits the handling of your product.

Hendrick can provide you with all mesh types, all metals, all thicknesses in the commercial range.

Your inquiry is invited.

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Makers of Elevator Buckets of all types. Mitco Open Steel Flooring. Mitco Shur-Site Treads and Mitco Armorgrids. Light and Heavy Steel Plate Construction.



Keep your conveyor belts going with FLEXCO HD BELT FASTENERS



• FLEXCO H D RIP PLATES are used in repairing rips and patching conveyor belts. The wide space between outer bolts gives the fastener a long grip on the edges of the rip, while the center bolt prevents the fasteners from bulging.



• Avoid shutdowns and lengthen the life of your conveyor belts and bucket elevator belts by using Flexco HD belt fasteners and rip plates. Thousands of companies have stepped up the performance of conveyor lines and cut costs by using Flexco methods.



• FLEXCO H D BELT FASTENERS make a strong, tight butt joint with long life. Recessed plates embed in belt, compress belt ends and prevent ply separation. Six sizes in steel and alloys.



Bulletin F-100 shows exactly how to make tight butt joints in conveyor belts with Flexco HD Belt Fasteners. Also illustrates step by step the latest practice in repairing rips and putting in patches.

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FLEXCO HD BELT FASTENERS
Sold by supply houses everywhere

WISCONSIN Air-Cooled ENGINES



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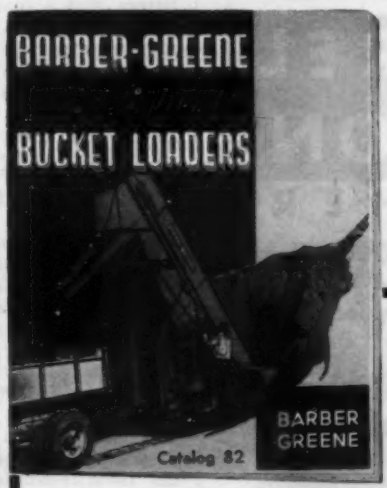
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Most H.P. per pound

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Q-82

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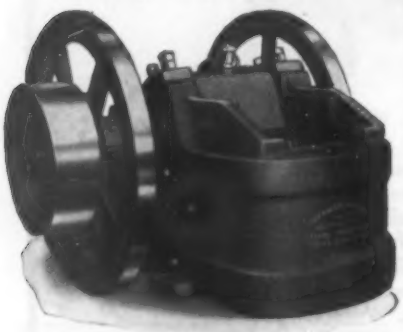
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OBITUARIES

Bernard L. McNulty

BERNARD L. MCNULTY, president, Marblehead Lime Co., Chicago, Ill., died of a heart attack at his home in Wilmette on March 3. He was born May 20, 1883, in Chicago. In his death the lime industry lost one of its best known, progressive manufacturers, and a man of sterling character.



Bernard L. McNulty

In a way Mr. McNulty was an alumnus of ROCK PRODUCTS, and to this journal he owed his introduction to the lime industry. After a short experience with the Monon Railroad, he came to ROCK PRODUCTS' editorial staff in the days of E. H. Defebaugh and Fred Irvine, probably in the early 1900's. ROCK PRODUCTS was then, and still is, very close to the lime industry because of the good work of its founders in organizing the original National Lime Manufacturers' Association.

Thus young Mr. McNulty was able to get an inside view of the lime industry and to listen to Fred Irvine, first secretary of the Lime Association, who was an enthusiast on the possibilities of the industry—one of his favorite subjects. Mr. McNulty said, many years later, that what impressed him the most at that time was the number of elderly men in the lime industry and its lack of young blood. So he left ROCK PRODUCTS to become a merchandizer in Chicago for Wisconsin lime.

He did so well at this that the Lehigh Lime Co. employed him to handle its business, the Lehigh Lime Co., being a subsidiary of the Lehigh Portland Cement Co. Mr. McNulty left his position as general manager of the Lehigh Lime Co. in 1922 to become associated with the late J. King McLanahan in the reorganization of the Marblehead Lime Co., of which he was elected president. Subsequently, the two obtained control of the New England Lime Co., of which, for a time, Mr. McNulty was also president.

Mr. McNulty, for many years, was active in the National Lime Association as a director and from July, 1929, to 1934, as chairman of its board of directors. At the time of his death he was a member of Advisory Committee for the Lime Industry under the W.P.B. He was also a trustee of the Illinois Institute of Technology and vice-chairman of its development committee; a trustee of the Armour Research Foundation and vice-chairman of its research board.

•

DR. BENJAMIN L. MILLER, professor of geology at Lehigh University, Bethlehem, Penn., since 1907, passed away March 23 at the age of 70. Dr. Miller, long an active member in the American Institute of Mining and Metallurgical Engineers, has written numerous reports on geological survey results which have been published by the U. S. Geological Survey and various State geological surveys. He has also written articles for technical trade journals on the economic geology of limestone, cement, graphite and other non-metallic products, and on the stratigraphic geology of eastern Pennsylvania. Dr. Miller was born in Sabetha, Kansas, April 13, 1874.

•

BRAYTON R. BABCOCK, president of the Callanan Road Improvement Co., Albany, N. Y., died recently after a short illness. He was 74 years of age. Mr. Babcock was a native of Ceres, Penn., and in his earlier years was employed in the superintendent's office of the Delaware and Hudson Railroad. In 1909 he became associated with the Callanan firm and became its president in 1939.

•

IRVING W. WORTMAN, president, Bound Brook Crushed Stone Co., Morristown, N. J., died February 27 at his home in Morristown. He was 59 years old. Mr. Wortman also was president of the Commonwealth Quarry Co., Morris County Crushed Stone Co., North Jersey Amiesite Co., and the North Jersey Quarry Co.

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LARRY G. BANNER, former superintendent of the Estill Springs Sand and Gravel Co., Nashville, Tenn., was found burned to death in his trailer in a camp near Tullahoma, Tenn. He was 42 years old.

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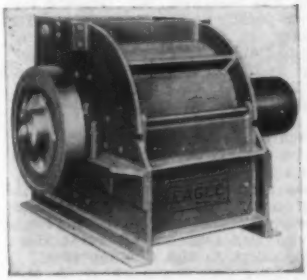
LOUIS M. BEATTIE, treasurer of the Valley Sand and Gravel Corp., Rochester, N. Y., died recently. He was one of the organizers of the firm which was founded about 20 years ago.

•

ROBERT R. THOMAS, president of the Hill-Thomas Lime and Cement Co., St. Louis, Mo., died recently at the age of 70.

IDEAL FOR AGSTONE

PRODUCES THE RIGHT SIZE *in one operation* AT LOW COST



EAGLE
IMPACT BREAKERS AND PULVERIZERS

Write for descriptive literature about EAGLE Impact Breakers and Pulverizers and other EAGLE equipment.

EAGLE PULVERIZERS are specially adapted for reducing limestone in one operation to meet strict specifications for agricultural purposes, and at a very low operating cost. They have heavy, free swinging reversible manganese steel hammers with four wearing adjustments. A special alloy steel shaft revolves on self-aligning SKF Bearings, protected from dust by labyrinth seals, which are the most efficient known to the industry. When you work with agstone use EAGLE PULVERIZERS. Sizes 12x16 and 12x24-in. with screen spacers from 1/16 to 2-in.

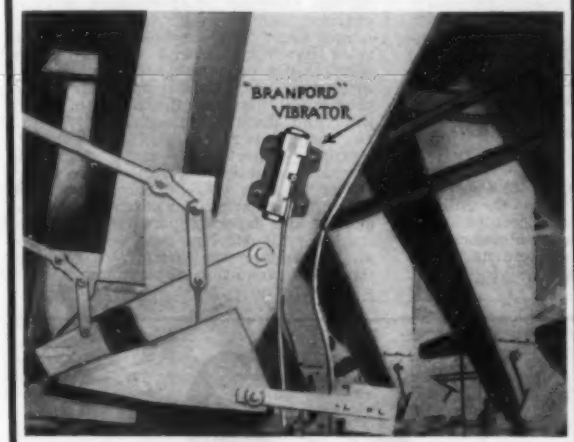
TERRITORY NOW AVAILABLE FOR DISTRIBUTORS

EAGLE

JAW CRUSHERS
IMPACT BREAKERS
PULVERIZERS
CONVEYORS
LOADERS

EAGLE CRUSHER CO., INC.
GALION - - - - OHIO

"BRANFORD" PNEUMATIC VIBRATORS



Avoid costly delays in equipment and labor by using BRANFORD Pneumatic Vibrators on *Hoppers, Bins, Chutes, Screens and Concrete Buckets* to assure free, even flow of materials.

Eliminate hanging up or arching over of materials. Prevent costly damage to equipment by sledging; keep labor costs down and material handling equipment operating at capacity.

Economical in operation and maintenance. Few moving parts. Even flow of materials, regulated by turning air valves. Hundreds in successful use. Write for complete data.

NEW HAVEN VIBRATOR CO.
145 CHESTNUT ST. NEW HAVEN, CONN.

MAKE THE BEST CHOICE FOR BETTER AND LONGER SERVICE

It Pays to use

ORO

SUPERMANG REPAIRS

for

JAW CRUSHERS
ROLL CRUSHERS
GYRATORY CRUSHERS
PULVERIZERS
POWER SHOVELS
POWER CRANES
POWER DRAGLINES
FEEDERS & CHAINS



ORO SUPERMANG is a superior grade of Manganese Steel made by alloying regular 11 to 14% manganese steel to give greater strength and more resistance to wear.

KENSINGTON STEEL CO.
507 KENSINGTON AVE.
CHICAGO 28, ILL.

New and Used EQUIPMENT

SPECIAL

P. & H. 1 YD. SHOVEL—Reconditioned.
ROTARY CONVERTER—1000 KW Westinghouse. Transformer and auxiliaries.
TURBINE—100 HP. Westinghouse, 27000 RPM. gear reduction.
AIR COMPRESSOR—I. R. Duplex, 100 HP. motor and receiver.
STEEL GUY DERRICK—110' mast, 90' boom—3 drum Clyde hoist, electric.

CRANES

1—**LOCOMOTIVE**, 4-wheel, 10 ton, 25' boom, Brown Hoisting Co.
1—**OVERHEAD**, 10 ton, 78' span, air operated.

CONVEYORS AND ELEVATORS

1—**CONVEYOR**, 110' x 24", ball-bearing, rollers and idlers, complete with belt, like new.
BUCKET ELEVATORS—Several sizes.

DRILLING EQUIPMENT

1—No. 40 I. R. Drill Sharpener.
1—Wagon Drill, Gardner-Denver.

DRYERS AND COOLERS

1—3½' x 44'.
1—7' x 56', and others.

KILNS

Vulcan 7' x 120', like new. And other sizes.

FEEDERS

2—**BAILEY FEEDERS**, Type No. 2, complete with steel hoppers, 8½ dia. x 12' cone bottom.

GRINDING EQUIPMENT

1—**CRUSHER**, Kennedy No. 14 Gyratory.
1—**PUG MILL**, 15" diameter x 8½', with heaters.
1—**TUBE MILL**, 5½' x 20'. F. L. Smidth Co.
1—**TUBE MILL**, 5½' x 22'.
1—**TUBE MILL**, 5' x 10'.
2—**RAYMOND MILLS**, 4 rolls.

SCREENS

4—**SINGLE DECK HUMMER SCREENS**, 4' x 5', complete with feeder and generator.
2—**SINGLE DECK HUMMER SCREENS**, 4' x 5'.
1—**TRIPLE DECK KENNEDY SCREEN.**

SYNCHRONOUS MOTORS

1—1900 HP. 25 cycle, 2200 V.
2—1250 HP. 25 cycle, 2300 V.

WANTED { DIESEL AND GENERATING EQUIPMENT / CEMENT MANUFACTURING EQUIPMENT }

WEBBER EQUIPMENT CO.

New and Used Equipment

17 EAST 45TH ST. MU. 2-6511 NEW YORK 17, N. Y.

RYERSON STEEL IN STOCK

Call Ryerson when you need steel—any kind, shape, or size. Large stocks are available at ten convenient plants. Ask for a Ryerson Stock List—your guide to quick shipment of steel.

Principal Products Include:

Bars • Shapes • Structurals • Plates • Sheets
Floor Plates • Alloy Steels • Stainless Steel
Shafting • Screw Stock • Wire • Mechanical
Tubing • Boiler Tubes • Reinforcing Steels
Tool Steels • Babbitt • Nuts • Bolts • Rivets
Welding Rod • Etc.

JOSEPH T. RYERSON & SON, Inc.

Plants at:

CHICAGO, MILWAUKEE, ST. LOUIS, DETROIT, CINCINNATI, CLEVELAND, BUFFALO, BOSTON, PHILADELPHIA, JERSEY CITY

Manufacturers' News

Dewey & Almy Chemical Co., Cambridge, Mass., has won a second Army-Navy "E" award for continuing to maintain a high standard of production for the war effort. The award means the addition of a white star to the "E" pennant received last summer.

Willamette Hyster Co., Portland, Ore., and Peoria, Ill., has announced the appointment of Dar Johnson as sales promotion and advertising manager. He was formerly with the Peoria, Ill., Journal-Transcript as public relations and industrial promotion manager. Willamette Hyster Co., manufactures heavy duty, high-speed hoisting equipment for use with Caterpillar tractors and Hyster lift and straddle trucks.



DAR JOHNSON

Mack Trucks, Inc., New York, N. Y., has received the War Department's National Security Award for maintenance of protection measures against accidents, sabotage and possible enemy air raids, and is now privileged to fly the National Security flag along with the Army-Navy "E" banner.

Independent Pneumatic Tool Co., Chicago, Ill., has elected Neil C. Hurley chairman of the board of directors. Neil C. Hurley, Jr., who has been associated with the firm for 12 years and has successively served as secretary, vice-president and executive vice-president, has been named president of the company. Edward G. Gustafson, treasurer, and John McGuire, secretary, were elected to the board of directors.

Tyson Bearing Corp., Massillon, Ohio, has elected John K. Colgate as president of the company, succeeding Ralph Maxson, who has resigned. Mr. Colgate has been vice-president and treasurer for three years. In addition, he is a director of Colgate-Palmolive-Peet Co.; director, treasurer and secretary of Van Strum & Towne, Inc., well known New York investment counsel firm, and trustee of Colgate University.

Harnischfeger Corp., Milwaukee, Wis., has named J. D. Glatz as manager of the company's new repair sales division. Mr. Glatz was formerly with the W.P.B. in Washington as chief of the crane and hoist section in the tools division. Prior to that he was representative for Harnischfeger Corp. in the Chicago area.

U. S. Rubber Co., New York, N. Y., announces the following promotions at the Bristol plant: W. K. Priestly, formerly chief of process engineering, has been promoted to the position of development engineer; L. E. Dickinson, chief chemist, is now chief process engineer; W. H. Dibble, assistant chief chemist, is chief chemist, and J. F. S. Abbott has been named chief latex engineer in charge of latex development and control. F. S. Bartlett has been made assistant factory manager; T. C. Jannsen has been named production manager in charge of planning and manufacturing; A. E. Newton has been made general foreman of manufacturing departments, and J. Waters is foreman of latex towers.

The Foxboro Co., Foxboro, Mass., has appointed Charles Schwarzler as manager of the export department, succeeding Henry B. Moelter, who died recently. Mr. Schwarzler was formerly manager of the sales promotion department.

HAMMOND MULTI-WALL PAPER BAGS

HAMMOND Better Bags WELLSBURG, W.VA.

Sewn and Pasted Open Mouth and Valve Paper Bags. Your Inquiries Invited. WRITE TODAY!

HAMMOND BAG & PAPER CO.
Paper Mill and Bag Factory: WELLSBURG, W. VA.

TRACK HAULAGE IS CHEAPER HAULAGE

PLYMOUTH LOCOMOTIVES

• FROM 2½ TO 70 TONS •

PLYMOUTH LOCOMOTIVE WORKS
Division of The Fate-Root-Heath Co. • PLYMOUTH, OHIO, U. S. A.

ARMSTRONG-BRAY STEELGRIP FLEXIBLE BELT LACING



ARMSTRONG-BRAY
STEELGRIP
FLEXIBLE BELT LACING

8 sizes boxed or in long lengths for wide conveyor belts. Best for rubber and fabric belts because it compresses belt ends and prevents fraying. Applied in a few minutes with a hammer. 2-piece hinged rocker pins.

Also, WIREGRIP Belt Hooks that fit any lacing machine. IMMEDIATE DELIVERY on both types.

Write for Circulars.

Armstrong-Bray & Co.

"The Belt Lacing People"
5336 Northwest Highway
CHICAGO 30, U. S. A.

McLANAHAN EQUIPMENT for ROCK—SAND—GRAVEL

Single and double roll and jaw crushers, hammer mills, super dry pans, steel log washers and scrubbers, sand drags, revolving and vibrating screens, elevators, conveyors, dryers, jigs, hoists. Complete portable, semi-portable and stationary crushing, screening and washing plants for different capacities of any materials.

McLanahan & Stone Corporation
Established 1835
Hollidaysburg, Pennsylvania

Wickwire Spencer Steel Co., New York, N. Y., announces that R. T. Dunlap and E. F. Early have been elected vice-presidents of the company. Mr. Dunlap was previously assistant to the president and for the past several months has been acting in the capacity of general superintendent at the Buffalo plant. Mr. Early, who has long been associated with Wickwire Spencer, is general superintendent at the Morgan plant in Worcester, Mass. Both men will continue their present duties and responsibilities with the company. The present board of directors was continued in office for the succeeding year.

Westinghouse Electric & Mfg. Co., East Pittsburgh, Penn., has appointed William D. Turnbull as manager of the agency and specialties department. Mr. Turnbull's appointment marks his return to Westinghouse after an absence of four years, during which time he was vice-president and sales manager of the Pomona Pump Co. of California. Prior to that he was manager of the Westinghouse machinery electrification section.

American Chain & Cable Co., Inc., and associate companies, Bridgeport, Conn., has appointed Edward V. Creagh as advertising and sales promotion manager. Mr. Creagh joined the company in 1916 and has been in charge of sales promotion activities since 1936. His new duties will cover newspaper, magazine, business publications, and other forms of advertising, in addition to sales promotion. One of the organizers and first president of the Western New England Chapter of National Industrial Advertisers Association, Mr. Creagh is now serving as a vice-president of the National organization.

The Cooper-Bessemer Corp., Cleveland, Ohio, has been awarded the Army-Navy "E" pennant in recognition of outstanding war production at its plants in Cleveland, Ohio, and Grove City, Penn. This new honor is in addition to the Minute-Man flag for War Bond subscription and the Maritime Commission's "M" burgee, for which they have received two gold stars for continued achievement.

H. K. Porter Co., Inc., Pittsburgh, Penn., has purchased the Mt. Vernon Car Mfg. Co., freight car manufacturers, and its subsidiary, J. P. Devine Mfg. Co., Inc., makers of heavy chemical, food and oil refinery equipment, both with plants at Mt. Vernon, Ill.

The National Supply Co., Springfield, Ohio, has named John D. Spalding works manager of the Superior Engine Division plant. Mr. Spalding joined the National organization as plant engineer at the Carnegie, Penn., plant in 1923. Eight years later he was transferred to the Toledo plant as assistant district engineer and then to the Torrance, Calif., plant as patent engineer. From 1935 to 1938 he served as assistant to the vice-president and as works manager of the Torrance plant until his present appointment at the Springfield plant.

New Incorporations

Blue Hill Sand & Gravel Co., Inc., 731 So. Main St., Randolph, N. Y., has been incorporated to deal in sand, gravel, etc., with a capital stock of 80 common shares, no par value. Alfred Lind is president; Milton Lind, 41 Rosseter Road, Dorchester, N. Y., is treasurer, and Clarence Lind is clerk.

Guilquarry Stone Co., Wilmington, Del., has been granted a charter to deal in stone, granite, rock, with a capital of $250,000. Principal office, Corporation Service Company.

Lucille Black Sand Co., Wilmington, Del., has been organized to deal in sand, gravel, rock, with a capital of $1,000,000. Principal office, Corporation Trust Company.

[SC]² PRECISION CONCRETE CONTROL

FOR BETTER CONCRETE

Batches to these tolerances:
Dry weight of aggregates, ¼%.
Water, ½-gal. per cu. yd.—Yield, ¼%.

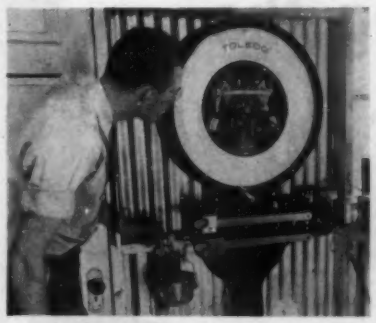
Saves Yield . . . . You can set your mixes to a yield tolerance of ⅛% and collect for concrete you now give away.

Saves Cement . . . Most of the cement that has to be added to provide for the usual variation in the water-cement ratio. Substantial savings are often possible.

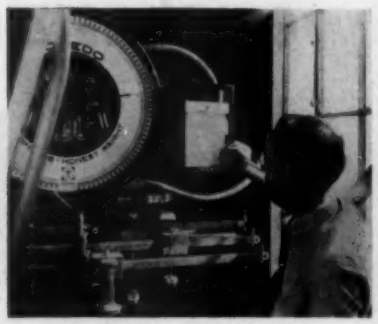
Saves Truck Time . Eliminates hold-ups to add water. Saves by fast accurate batching.

Saves Stock Piling . No longer necessary for moisture control.

Better Concrete—Faster Batching—Lower Cost



THE [SC]² MOISTURE METER. The only unit capable of determining moisture content in less than one minute.



THE [SC]² COMPENSATOR which compensates for the moisture content in every ingredient and graphically records its every operation.

Get set for post-war competition. Let us show you what [SC]² Control has done for many small and large plants. Write today for free survey and report on what [SC]² can do for you.

SCIENTIFIC CONCRETE SERVICE CORPORATION
McLachlen Building, Washington, D. C.

INTRODUCTORY $10.00 PACKAGE

For welding of 11 to 14% Manganese steel

Gyratory, Roll, Jaw Crushers, Dipper Teeth, Pump Shells, Impellors and all Equipment that wears due to impact and abrasion.

Contents
Manganal Special Tite-Kote Welding Electrodes
5 lbs. ¼" x 18"
10 lbs. 3/16" x 18"
5 lbs. 5/32" x 18"
for
A.C. & D.C.

Seaco Hard Facing Electrodes
5 lbs., 3/16" x 12".
for
A.C. & D.C.



$13.67 Worth for $10.00. Only one box to a customer.

Our Distributors can make immediate shipment.

☐ Have your nearest Distributor ship us, (1) only, $10.00 Introductory Package.

☐ Mail us Direct, one FREE copy of your New Booklet, "The Welding of 11 to 14% Manganese Steels."

Name .....
Street .....
City .....
State .....

Sole Producers
STULZ-SICKLES CO.
Newark 5, N. J.

Are you properly emphasizing the SAVINGS FEATURE OF YOUR PLANT'S PAYROLL SAVINGS PLAN?



WITH the war swinging into its tensest phase, now's the time to emphasize over and over again the *savings* feature of your Payroll Savings Plan. To press home to all your people the need of building up their savings—the need of building up their savings not only in wartime but also in the years directly after the war. To point out that a bond cashed before its full maturity is a bond killed before it has given its fullest service to its owner—*or to his country!*

Buying War Bonds, holding War Bonds, and keeping wartime savings mounting—all are absolutely vital. But no one of these is enough by itself. The *savings habit* must be carried over into the years of reconstruction which will follow the war. For if, at war's end, we have 'flash-in-the-pan' spending, *everybody loses.* The spender loses, you lose, and the country loses! While a working public, convinced of the value of continued, planned saving, is the soundest possible foundation for private enterprise of every sort.

We call these bonds War Bonds—and with their aid we will win this war at the earliest possible moment! But they're Peace Bonds, too—and, rightly used, they will win for their holders, *and for all of us,* a happy and prosperous place in the years of peace to come.

WAR BONDS to Have and to Hold.

The Treasury Department acknowledges with appreciation the publication of this message by

ROCK PRODUCTS

★ Let's All Back
★ the Attack...
★ with War Bonds!

This is an official U. S. Treasury advertisement—prepared under auspices of Treasury Department and War Advertising Council

DESIRABLE EQUIPMENT! FOR IMMEDIATE SHIPMENT!

JAW CRUSHER
1—36"x48" Allis-Chalmers.

GYRATORY REDUCTION CRUSHERS
1—5½' Symons, coarse bowl.
1—3' Standard Symons, coarse bowl.

AIR COMPRESSORS
1—12"x10" Ingersoll-Rand ER-1, with 50 HP, 3/60/220 v. motor, receiver, etc., 355 CFM. 100 lb. pressure.
1—315-A Ingersoll-Rand Portable Air Compressor, 2-stage, 100 lb. pressure, Hasselman oil engine drive. Rebuilt.
1—4000 CFM Nordberg, driven by 750 HP Diesel Engine, 100 lb. pressure.

BELT CONVEYORS
3—Portable Belt Conveyors, 16"x20' and 25'.
1—Belt Conveyor, 30"x120'.

CRUSHING ROLLS
1—Set 36"x16" Sturtevant.
2—40"x16" Colorado Iron Works.
1—24"x40" Single Roll.

VIBRATING SCREENS
7—Tyler Hummers; 3'x5', 4'x5', one and two-deck.

ROTARY KILNS
2—8'x135', 8'x125'.
1—7' and 8'x80' Traylor.
3—5'6" x 7'x80' Vulcan and Reeves.
1—6'x60' Mosser.

DIRECT HEAT ROTARY DRYERS
8—4'x30', 5'6"x24', 5'x30', 5'x40', 6'x50'.

SPECIAL
3—70"x30' Ruggles-Coles Type A-9 double shell Direct Heat Rotary Dryers.

BALL AND TUBE MILLS
3—Hardinge Conical Mills.
1—5'x22" iron lined.
2—6'x48" silex lined.
1—5'x20' Bonnot Tube Mill, silex lined, cast steel heads, for direct gear drive.

INDIRECT HEAT ROTARY DRYERS
3—Ruggles-Coles, Type "B," 4'x20' and 5'x38'

MISCELLANEOUS
1—P. & H. 600-A Gasoline Shovel, 1 yd., treads recently new, complete, general condition excellent.

FOR 25 YEARS A SYMBOL OF CONFIDENCE

CONSOLIDATED PRODUCTS COMPANY, INC.
15-16-17 PARK ROW NEW YORK, N. Y.
Shops and Yard at Newark, N. J., cover eight acres

FOR SALE

Besser Champion K-12 Plain Pallet **Fully Automatic Machine** with Automatic Tamper Control complete with pallets, motor drive shaft, belting, mixer, car racks and eight attachments for various size blocks. Capacity 240 blocks per hr. Priced for quick sale. Address:

BELOT CONCRETE BLOCK COMPANY,
Tiltonsville, Ohio

FOR SALE

X-71 Ingersoll-Rand Drill 9'-0" Quarry Bar 4½" Dia.

National Crayon Co.
Easton, Pa.

FOR SALE

2 Fairbanks Morse Automatic Batching Scales complete with 180 cubic foot hoppers. Register beam 16,000 lbs. This equipment is in good operating condition.

PEERLESS CEMENT CORPORATION
Detroit, Michigan

Gyratory Crushers: Allis-Chalmers 5, 6, 7½, 8. Kennedy Nos. 5, 19S, 25, 37 and 38S.
Jaw Crushers: Universal 10x30", 15x36". Farrell 13x24", 18x36", 24x36" and 36x42". Champion 10x36", 22x50". Carroll 24x36". Allis-Chalmers, Superior 56x84".
Single Roll Crushers: McL 18x24, 21x24, 24x48. Fairmount 36x50 corrugated shell.
2' & 3' Symons Cone Crushers.
2, 3 & 4 yard, 24 & 36" Ga. Dump Cars. Gasoline & Steam Locomotives, 36" & Std. Ga.
Bucyrus Class 14 Steam Dragline, 56' boom.
Insley ⅜ & ½ Yd. Gas Shovels. Others.
60 HP Caterpillar Diesel Engine, Rebuilt.
60 HP Fairbanks Diesel, Rebuilt.
100 HP Fairbanks VA Diesel, Rebuilt.
125 HP Venn Severin Diesel, Rebuilt.
250 CFM 11x10" Sullivan Compressor.
42"x21' Stephens-Adamson Apron Feeder.
18"x71' S-A Conveyor, complete.
Compressors, Elevators, Screens, Conveyors.
What do you need? What have you for sale?

MID-CONTINENT EQUIPMENT CO.
710 Eastgate
PA 2290 St. Louis 5, Mo.

FOR SALE

One fourteen (14) inch hydraulic pumping system, complete with pressure and sludge pumps—details on inquiry. Pyramid Coal Corporation, P. O. Box 1140, Terre Haute, Indiana.

PLANT EQUIPMENT

2000' INTERSTATE TRAMWAY with Loading and Discharge Equipment.

2 100-Ton Hydraulic Jacks, Watson-Stillman.

TYLER HUMMER SCREEN, Type 31, Electric—Arranged for double deck.

3'x5' Positive Vibrator Screen, Built by Manufacturers Equipment Co.

24" Belt Conveyor, Type 69, Link Belt—Up to 900' Centers.

Belt and Chain Bucket Elevators. All types.

THE WILLIAM W NEWELL COMPANY
P. O. BOX 477, NASHVILLE 2, TENN.

ELECTRICAL MACHINERY

Motors and Generators, A.C. and D.C., for sale at Attractive Prices. Large Stock. New and Rebuilt. All fully guaranteed. Send us your Inquiries.

V. M. NUSSBAUM & CO.
FORT WAYNE, IND.

FOR SALE

Approximately 6,000 12x16 steel cored pallets

CONCRETE & CINDER BLOCKS PRODUCTS CO.
10 Buell Rd. Rochester 11, N. Y.
Genesee 2121

You never can tell who may be looking for just the type of equipment you have to sell. List your idle equipment in a classified advertisement in ROCK PRODUCTS and convert it to ready cash as well as helping our war effort at the same time.

FOR SALE

Guaranteed used Steel Pipe and Boiler Tubes
Wood and Steel Tanks
Buildings, Valves and Fittings

JOS. GREENSPON'S SON PIPE CORP.
Natl. Stock Yds., St. Clair Co., Ill.

PULVERIZERS

One (1)—Sturtevant Vertical Emery Mill, new emery stones recently. Price $675.00
Four (4)—Kent Maxecon Ring Roll Mills, in good running condition, may be seen in operation. Price, each, $1675.00
One (1)—Bradley 3 Roll Pulverizer. Price, $1150.00

WHITEROCK QUARRIES
Bellefonte, Penna.

USED MACHINERY FOR SALE

FARREL 36"x18" B JAW CRUSHER, COMPLETE WITH MOTOR AND DRIVE

Motor 60HP Slip Ring 220 V. 3 ph. 60 C. Drive V-Flat with Ropes.
Condition Excellent. Price Low.

EARLE C. BACON, INC.
17 John St., New York 7, N. Y.

FOR SALE



You can hire equipment when you want it and "lay it off" when the job is done, by renting from Equipment Corporation. E. C. A. equipment is REBUILT after every job and is RE-GUARANTEED.

CRAWLER CRANE

1—¾ yd. Conco crane, Ser. No. 1304, fully revolving, power 70 H.P. Continental gas engine, 30' boom.

AIR COMPRESSORS

Portable and stationary, belt with elec. or gas power, sizes from 30 cu. ft. to 1,000 cu. ft.

CRANES AND SHOVELS

1—1¼ yd. Link Belt Model K42 crawler crane, Serial No. 1365, with 40' boom, gasoline powered, and pull shovel attachment.
1—1¼ yd. Erie gas air Model GA2, Serial No. 9758, with 45' boom and shovel attachment.
2—1 yd. Northwest No. 4, Serial Nos. 3441, 3493, 60' booms.
3—¾ yd. Koehring cranes, Model 301, with 45' boom, Serial Nos. 544, 772 and 840. Gasoline powered.
1—¾ yd. P & H Model 400 crawler crane, Serial No. 4136, with 40' boom gasoline powered.
1—½ yd. P & H shovel Model No. 204, Serial No. 2303, gasoline powered.
1—½ yd. Northwest No. 2, Serial No. 2908, comb. crane and shovel.
1—¾ yd. Erie Model B2 crawler crane, steam powered, Serial No. 4027, with 50' boom and shovel attachment.

CRUSHERS

1—No. 4 Champion jaw crusher, size 9x15", Serial No. 2806.
1—No. 2 Climax jaw crusher, size 9x16".
1—Buchanan jaw crusher, size 10x16".
1—Acme jaw crusher, Ser. No. 1873, size 12x20".
1—Acme jaw crusher, Ser. No. 1686, size 9x16".
1—United Iron Works, "Blake-type" jaw crusher, size 9½x24".
1—Allis Chalmers, No. 5 gyratory crusher, Ser. No. 5331, opening 10x38".
1—Austin No. 5 gyratory crusher, Ser. No. 2945, opening 12x35½".

DERRICKS

4—Steel Guy Derricks: 3—30-ton American, 100' mast, 50' boom; 1—5-ton Terry Guy Derrick, 70' mast, 60' boom; 1—5-ton Insley, 75' mast, 60' boom. Stiff leg derricks: 1—25-ton Hunter, 40' mast, 80' boom; 1—3-ton Pittsburgh, 28' boom, 15' mast. Also a number of wood stiff leg derricks, 1 to 5-ton cap.

HOISTS (Elec., Gas, Steam)

85—Electric, ranging from 20 H.P. up to 125 H.P., consisting of triple-drum, double-drum and single-drum, with AC or DC motors, some with attached swingers. Following makes: American, Clyds, Lambert, Lidgerwood and National.
Gas hoists ranging from 8 to 120 H.P., single, double and triple-drums; all standard makes (38 in stock).
Steam, ranging from 8 H.P. to 60 H.P., single, double and triple-drum; all standard makes.

LOCOMOTIVE CRANE

1—15-ton Bucyrus Erie locomotive crane, Serial No. 233, with 40' boom, steam powered. Equipped with air brakes. Thoroughly REBUILT. Cap. at a 12' radius and a 2 part line, 30,000 lbs. Boiler vertical size 54"x7'6". Shipping wt. 87,500 lbs.

PUMPS (Dredging)

1—10" Morris sand pump, Ser. No. 86864, cap. 87 cu. yds. per hr.
1—8" Cataract dredging pump, Ser. No. 173895, cap. 3000 GPM @ 53' head.
1—8" Morris cent. sand pump, cap. 60 cu. yds. per hr.

PNEU. TOOLS

A large quantity of Jack hammer drills, column tripod and derrick drills.

TRACTORS

1—Fordson tractor, on 4 steel or rubber tired wheels, with double drum winch.
1—Taylor tractor, on 4 steel wheels, Model A-16-30, power 4 cyl. Climax 52 H.P. gas engine.

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1—36 x 18 Primary Farrell-Bacon Crusher, 500-ton cap., with Diesel-Electric Equipment supplying own power.
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Location of plant: Higganum, Conn.

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OUTSTANDING VALUES

30 Ton Plymouth Diesel Locomotive, Standard Gauge.
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80 and 150 H.P., 125 lb., H.R.T. Steam Boilers.
20/26 Yd. Electric Crawler Stripper Dragline & Shovel.

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Bucyrus-Erie gas-air shovels, 1¼-yd., A-1, (2).
Davenport 19-ton locomotives, steam, 36" ga. (2).
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Gyratory crushers: 27", 21", 18", 12" 10", 8".
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Newhouse 7" gyratory reduction crushers, (2).
Portable Universal duplex stone crushing plant.
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Boiler tubes, 236—1¾" O.D.x5', ferrules (new).

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GYRATORY: 42" Gates K. 36" Superior McCully (Like new). 20" Superior McCully. Gates Nos. 12, 10, 9, 8, 7½, 6, 5, 4, 3, 2, 1 (75 avail.) Telsmith Nos. 4, 5, 6, 8C, 9 & 16. Also many Austins, Kennedys and Traylors, many sizes.

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REDUC. TYPE: Kennedy Nos. 25, 37 & 49. Telsmith 3-F & 40. Traylor 36" TX, 8", 10", 12". Super. McCully 8"x10". Newhouse 5, 7, & 10". Symons Cone & Disc Ty. 2' to 4'.

ROLLS: Allis-C. 12½x12, 36x10, 40x15, 54x24 & 72x30. Fairmount 36x60 & Jeffrey 24x24 to 36x54 single roll. Cornish 36x14 & 42x16, Etc., Etc.

HAMMERMILLS: Williams No. 1, 2, 3, 4, 5, & 9. Jeffrey 36x18 & 36x42. Day Nos. 20 & 40. Etc.

MILLS: Kennedy Ball 4x6, 5x6 & 5x8. Marcy 8x6 & 10x9. Hardinge 6'x3', 8'x30' & 6'x9'. Misc. Tube Mills 5' & 6' x 22'. Sturtevant Ring Roll, Raymonds, Kents, Fuller Lehigh, Etc., Etc.

CRUSHING PLANTS: No. 65 Diamond No. 22 Pioneer 8x24, 1630 Good Roads, 9x40 Austin-Western, 9x36 C.R.

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Barges, Bins, Buckets, Boilers, Cableways, Cars, Compressors, Conveyors, Cranes, Dryer, Derricks, Elevators, Excavators, Generators, Hoists, Kilns, Draglines, Drag Scrapers, Dredges, Drills, Engines, Locomotives, Loaders, Motors, Pipe, Pumps, Rail, Scales, Screens, Slacklines, Shovels, Tanks, Trucks, Tractors, Etc., in many sizes, types and makes at low prices. (I have equipment at many points in the United States and Canada. What you need may be near your plant.)

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1—Complete Roto-lift portable crushing and screening plant with 15 x 24 jaw crusher, roller bearing, 36 x 20 roll crusher, power unit, 12 pneumatic tires, weight of plant complete 55,200 lbs. Plant in excellent condition. Priced for immediate sale.
2—30 cu. yd. 3 compartment Steel Jack Leg Bins. Have been in use 15 months.
1—Continuous bucket elevator, 30' centers, complete.
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FOR SALE

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Marion 92, 5 yard Steam Caterpillar Shovel.
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Buc. Erie 43B, 1¾ yard Gas Shovel.
P & H 700B, 1½ yard Crane & Shovel.
Page Walker 2 yd. Dragline, Diesel.
Lorain 30 Shovel, Crane & Backhoe, rebuilt.
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P & H. 600 Shovel Crane and Backhoe, gas.
Speeder ⅝ yard Crane & Backhoe.
Moore Speedcrane, 15 tons, gas 65' bm.
Bucyrus Erie Model 1030 Electric Tunnel Shovel.
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Brownhoist 7½ ton Gas Crane.
Ind. Brown hoist 10-ton Cat. Crane, gas.

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CletracFGC Tractor with 12 yd. Emsco Scraper.
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Cletrac 27 Tractor with angledozer.
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TD9 Tractor with Shovel Front and Bulldozer.
Allis-Chalmers L Tractor with Baker bulldozer.
5—Euclid Trac-Trucks, Deisel, 9 yd.
Bucket Elevator, vertical, 40', 24" buckets.
Ransome 34E Dual Drum Paver. Excellent.
I.R. two stage, 315 CFM, Portable Compressor.
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4—Gardner-Denver Wagon Drills.
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2—Ransome 288 Mixers on skids, left & right-hd.
Blaw-Knox 750 BBL 2 compt. Cement Bin.
Heltzel Ready-Mix Plant, 100 ton Aggregate Bin and 250 bbl. Bulk Cement Bin, electrical interlocking.
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Rex Pumpcrete Model 200 with 750' pipe.
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Ransome 27E Dual Paver with boom and bucket.

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Telsmith 20-B steel frame Gyratory, V-belt drive.
Gyratory Crusher; K.V.S. 30, 37-S, 49; 32, 8A, 8S; Traylor 8"; McCully 15", 8", 6".
Allis-Chalmers Anaconda Type, 54"x24".
Jaw; 6x12, 9x16, 10x20, 14x24, 12x36, 13x30, 16x32, 56x84.
Complete Rock Crushing Sand & Gravel Plants.

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Erie ¾-yd. Clamshell, rehandling.
Owen Stone Grapple.
Hayward ⅝-yd. Standard Orange Peel.

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American 60-ton, steam, std. ga.
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American 45-ton, steam. Saddle Tank.
Davenport 10-ton, 36" gauge, gas.
Whitcomb 14-ton Diesel, 36" gauge.
Vulcan 8-ton, std. gauge, gas.
Vulcan 6-ton, gas, 36" gauge.
Porter 12-ton Saddle Tank, Steam 36" ga.
21—Koppel, 4 yd., 36" gauge Dump Cars.
6—40-ton Standard Gauge Flat Cars.

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27-E Smith Paver, Model H-31.
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1 Yd. Northwest 105 Shovel-Crane.
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Gardner-Denver Loader, Model GD-9.
5—Electric Hoists, 40, 50 and 60 H.P.
Gard-D. Compressor, 630' A.A., E. Dr.
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Shovel Attachment for 41-B Bucy-Erie.
McK-T Pile Hammers, 3, 5, 6 and 7.

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1—¾ yd. Marion Shovel, Model 120 with International engine, perfect condition.
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1—DUMP TRUCK BODY, St. Paul, 2½ cu. yd. Serial No. 10506, Type BB with 7" Hoist and Power Take-Off and Middle Batch Gate (new 1941). Price.$255.00
1—BELT CONVEYOR, Barber Green, portable, 24" belt, 30' long, powered by 12.5 HP Gasoline Engine, complete with Track Hopper. Price $1,331.00
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1—CRANE-CLAMSHELL COMBINATION, Bucyrus-Erie Model 1035, Serial No. 11196, equipped with 40 ft. Boom, powered by Waukesha Gasoline Engine with Electric Starter $5,500.00
1—CLAMSHELL BUCKET, Blaw-Knox size 716, 1½ cu. yd. $582.00
1—COMPRESSOR, Stationary, Sullivan, Angle Compound, Model WJ-3, 348 cu. ft. actual air, equipped for flat belt drive $1,333.00
1—CRUSHING PLANT, consisting of 15x36 Pioneer Roller Bearing Jaw Crusher, 42"x 17'0" Revolving Screen, 36 ft. Bucket Elevator, 12x24 Roll Crusher, "Caterpillar" Model D 13000 Diesel Power Unit, 849 Ingersoll-Rand Jack Hammer and lot of necessary Sprockets, Chains and Drives. **PRICE ON APPLICATION**
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1—BELT CONVEYOR, Portable Barber Green, 24" Belt, 30' long, powered by 12 HP. Leroi Engine, complete with Track Hopper $1,331.00
1—TRACTOR, Allis-Chalmers, Model L, equipped with front Push Bumper and Electric Starter $3,031.50
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1—PUMP, Jaeger Centrifugal Model 4P, 4-inch suction, 4-inch discharge, Gasoline Powered $611.00
3—PUMPS, Jaeger Centrifugal, Model 3XP, 3-inch suction and 3-inch discharge, Gasoline Powered .....Each $227.00
1—GENERATOR, Direct Current, Jenney, 37.5 KW, 220 volt, 170 amps, 800 RPM Compound (not Interpole) $400.00
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KENTUCKY

1¼ yd. Northwest Shovel and Crane with 4-cylinder Wisconsin Motor.
36x24 Farrel Jaw Crusher, Type B.
36x18 Farrel Jaw Crusher, Type B.
30x13 Farrel Jaw Reduction Crusher.
24x12 Champion Crusher No. 5.
20x10 Reliance Jaw Crusher.
20x10 Acme Jaw Crusher.
13A Telsmith Primary Gyratory Crusher.
No. 38 Kennedy Ball Bearing Reduction Crusher with synchronous motor.
30x20 Kennedy Roll Crusher.
5'x24' Traylor Trunnion Drive Revolving Screen.
5'x28' Traylor Heavy Duty Positive Drive Revolving Screen.
66' center 30" belt bucket elevator—12-ply belt.
70' center 12" chain bucket elevator with frame.
30' center 16" chain bucket elevator with frame.
80' center 18" belt conveyor with frame and belt.
120' center 18" belt conveyor with lattice frame and new belt.
150' center 24" belt conveyor with frame and belt.
150 HP. Bessemer Diesel Engine—two cylinder.
5—Portable belt conveyors from 12" to 18"—18' to 24' long.
25—tons of repair parts for 30x13, 36x18 and 36x24 Farrel Crusher: namely, jaw plates, round backs, wedges, eccentric shafts, swing jaw shafts, cheek plates, toggles, toggle bearings and false cheeks.
5 yd. Austin-Western Scraper Wagon.
Electric Motors from 2 to 400 HP.

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Jaw Crushers: 9"x16", two 11"x20", 18"x32".
Traylor 11" "BULLDOG" Gyratory Crusher.
Robins Double Roll Spiked Coal Crusher, 24"x30".
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Single Roll Coal Crusher with Spikes, 24"x24".
Simplex Roller Bearing Coal Pulverizer.
American Standard Disintegrator, 24"x2", 18"x30".
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36"x175' Trough Belt Conveyor.
Selected Belt Idlers and Pulleys.
400' of 6 ply 36" Conveyor Belt.
300' of 6 ply 14" Conveyor Belt.
86' new stepped 54" Conveyor Belt.
Single strand Flight Conveyors, 11" and 13".
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Jeffrey Standard Steel Apron Feeder, 24"x60'.
Three Robins Automatic 14" Belt Trippers.
Hand Propelled Trippers for 24" and 30" belt.

BUCKET ELEVATORS

Enclosed 16" Bucket Belt Elevator, 35' to 120'.
Enclosed 12" Bucket Belt Elevator, 50' to 90'.
Enclosed 8" Bucket Elevator, 55'.
Enclosed 6" Bucket Belt Elevator, 32'.
Open 16" Bucket-Chain Elevator, 50'.
Open 18" Bucket-Belt Elevator, 40'.
Open 20" Bucket-Belt Elevator, 52'.
Continuous 14" Bucket Elevator, 50'.
Continuous 36" Bucket Elevator, 35'.
New 9 ply rubber cover Elevator Belt, 22".
Used 6 ply 20" wide Elevator Belt.
Gears, Sprockets, Elevator and Drive Chain.
2,000' of C102½ Chain with K2 attachments.

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C-P Air Compressor, 529', 100 hp motor.
Schramm Air Compressor, 360', 60 hp motor.
I-R Air Compressor, 275', gasoline.
Two Meyers Stone Saws, 60" and 48" dia.
Lincoln 42" Open Side Planer, 10 hp motor.
Lincoln 36" Open Side Planer, 7½ hp motor.
Patch 36" Belt Driven Planer, 12' bed.
Meyers 60" Carborundum Saw, motorized.
Meyers 48" Carborundum Saw, motorized.
Mang. lined 6" Sand Pump, 75 hp motor.
Worthington 4" Centrifugal Pump, 25 hp motor.
Electric, Gasoline and Belt Driven Pumps.
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Cargo Type Car Puller, 15 hp, 440 volts.
V shape 36" gauge, 2 yard End Dump Car.
Flat Cars for 20" and 24" gauge.
Turntables 48" dia., cast, ball bearing.
Eight enclosed 25 hp Angle Drives. NEW.

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Revolving Screens, 42"x18', 4'x16', 5'x20'.

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SPECIAL OFFERINGS IN SHOVELS, CRANES AND DRAGLINES

Bay City ⅜ yd shovel—entirely rebuilt, attractively priced because owner is joining the armed forces
Bucyrus-Erie 10-B ⅜ yd shovel and crane combination—located in New England
⅜ yd Byers with 25′ crane boom, skimmer scoop and backhoe attachment
½ yd General shovel, backhoe with skimmer attachment—exceptionally good condition
Bay City Model K rebuilt—½ yd capacity
½ yd Bay City shovel and backhoe combination—it also has a trailer
General Crane ½ yd—35′ boom—diesel powered
½ yd Insley shovel—rebuilt
½ yd Speeder rebuilt with backhoe attachment
½ yd Byers Bearcat shovel, crane and trailer
½ yd Northwest Model 2 crane and dragline attachments
½ yd P&H Model 200 crane—35′ boom
⅝ yd Byers, Bulldog type—BB series—shovel and backhoe. A real bargain
⅝ yd Insley shovel with ditcher attachment
Northwest No. 2 shovel in perfect condition
⅝ yd Sargent dragline—diesel engine—47′ boom
Speeder B-3—¾ yd dragline, fairleads—1½ yd Page bucket—Hercules gas powered
¾ yd Byers Model 10 crane, 40′ boom and bucket—has dragline attachments
¾ yd P&H Model 206—65′ boom
¾ yd Bucyrus 20-B diesel crane 42′ boom
¾ yd Byers crane 40′ boom—very reasonably priced
¾ yd Byers Hercules, 6 cylinder engine, 36′ crane boom, ¾ yd clamshell bucket
¾ yd Byers Model 80—33′ crane boom—rebuilt and guaranteed
Model 301 Koehring ¾ yd shovel—very reasonably priced
Koehring Model 301—¾ yd crane with 40′ boom
Koehring late model 303 shovel ¾ yd capacity
Linkbelt Speeder ¾ yd shovel with backhoe—built in 1940
Lorain 40 ¾ yd shovel and backhoe combination built in 1939
Lorain 40 shovel, backhoe and crane combination built in 1941
Lorain Model 45 shovel and crane combination capacity ¾ yd
Marion ¾ yd has shovel attachments, 30′ boom and brand new backhoe—built in 1939
¾ yd Marion shovel and crane combination
¾ yd Meade & Morrison shovel
Northwest Model 105 shovel, crane and dragline ¾ yd capacity
Osgood ¾ yd crane with 40′ boom and shovel attachment
Northwest Model 105 crane with 40′ boom and clamshell bucket
Osgood Conqueror ¾ yd crane with 70′ boom
¾ P&H shovel and dragline combination
P&H Model 200—¾ yd crane with 35′ boom
P&H Model 201 shovel and crane combination
P&H Model 400—¾ yd crane and shovel combination
¾ yd P&H Model 400 shovel
Bucyrus-Erie gas shovel—1 yd with backhoe, crane and fairlead attachments
1 yd Bucyrus-Erie crane with 52′ boom
1 yd Byers shovel with electric starter—Hercules 100 HP engine shovel front and 50′ crane boom
1 yd Byers Model 100 combination shovel and crane—40′ boom—Hercules engine—also has backhoe attachment
1 yd Koehring shovel and crane combination with Hawkbox digging bucket
1 yd Model K1 Linkbelt crane
1 yd Lorain 60 shovel and crane and dragline combination
1 yd Lorain 60-A diesel shovel
1 yd Marion Model 7 gas shovel and dragline combination
1 yd Marion Model 342 built in 1940—crane, backhoe and shovel combination
1 yd Northwest No. 4 dragline—60′ boom
1 yd Northwest No. 4 shovel and crane combination
1 yd Orton dragline
1 yd Osgood shovel and backhoe combination—45′ crane boom
1 yd P&H Model 600 crane—35′ boom in good condition
1 yd P&H Model 450 shovel
1 yd P&H Model 600 shovel
1¼ yd Bay City dragline
1¼ yd Bucyrus-Erie dragline powered by 80 HP Atlas diesel engine
1¼ yd Byers shovel and crane combination—entirely rebuilt
1¼ yd Byers Master—60′ crane boom and 1 yd shovel front
1¼ yd Koehring Model 501 shovel with 40′ boom
1¼ yd Lima Model 101 shovel and dragline combination
1¼ yd Lima 101 backhoe and shovel
1¼ yd Linkbelt Model K2 45′ boom—price very low
1¼ yd Lorain 55 gas shovel in very good condition
1¼ yd Lorain 75A with backhoe and shovel
1¼ yd Lorain 78A dragline and shovel combination
1¼ yd Lorain 75B diesel shovel and dragline
1¼ yd Marion 450 gas-electric shovel powered by a 6 cylinder Buda engine
1½ yd Marion diesel shovel Model 450 powered by a Buda diesel engine
1½ yd Northwest Model 5 crane and shovel combination—70′ boom
1½ yd Northwest Model 104 dragline
1½ yd Osgood crane—50′ boom
1½ yd P&H Model 700 shovel and dragline
1½ yd P&H Model 700 shovel
1½ yd Speederane Model 1600 crane and dragline combination
1½ yd Speederane shovel and crane combination with 60′ boom
1½ yd Bucyrus 37B shovel
1½ yd Link-Belt Model K45 dragline
1½ yd shovel and crane combination Linkbelt K45—rebuilt
1½ yd Lorain 75B shovel and crane combination
1½ yd Lorain 75D diesel shovel
1½ yd Model 490 Marion electric shovel
1 Northwest No. 6—1½ yd shovel and dragline combination
1½ yd P&H Model 210 dragline
1½ yd P&H Model 630 diesel shovel
1½ yd Link-Belt K44 dragline
2 yd Bucyrus-Erie 80B shovel
2 yd Page diesel dragline with 60′ boom
3½ yd Model 490 Marion electric shovel
2½ yd Marion electric shovel
4 yd Marion electric shovel with Ward-Leonard controls
3½ yd 3T Monighan dragline with 70′ boom
6½ yd Bucyrus-Erie Type 320B electric shovel
4 yd Monighan dragline with 70′ boom
20 yd Bucyrus-Erie tower machine—electric

Recommend Prompt Action On One of the Best Buys

1—¾ yd. Marion Diesel Crane and Dragline Combination. This unit is powered by 6-cylinder Buda diesel engine and is direct connected to generator which operates motors which are DC. 1¼ yd. clamshell bucket goes with the unit which is Type 471.

STEAM SHOVELS AND CRANES

Bucyrus-Erie Type B ¾ yd shovel and crane boom
Marion steam shovel and crane combination with 48′ boom and ¾ yd clamshell bucket
¾ yd Marion Model 77 shovel and crane combination, 40′ boom, ¾ yd digging bucket
⅝ yd Bucyrus-Erie Model 82 shovel and crane
1 yd Marion steam crane with 48′ boom
1 yd Orton steam crane with 75′ boom
1¼ yd Marion 450 steam crane with 60′ boom
1½ yd Bucyrus-Erie 35B steam shovel
1⅝ yd Marion steam shovel with 25′ shovel front and 22′ shovel stick
2 yd Bucyrus series 14 shovel and crane combination with 70′ boom
2 yd Bucyrus-Erie class 14 dragline
2 yd Marion Model 37 steam shovel
2½ yd Bucyrus-Erie Model 70 steam shovel
3½ yd Bucyrus-Monighan skid and roller type—165′ boom
3½ yd Marion Model 70 steam shovel
3½ yd Marion 76 steam shovel
4½ yd Bucyrus Class 24 dragline
8 yd Marion dragline with 165′ boom
8 yd Bucyrus-Erie class 230 steam dragline

DUMP TRUCKS

Diesel Federal semi-trailer dump units—1942 model—capacity 8 yd water level and 12 yd heap—We recommend these Federal trucks very highly as one of the best buys in the market.
Euclid diesel trucks—13 yd struck and 16 yd heap capacity
General Motors diesel dump trucks—1941 models—capacity 11 yds
5 Euclid diesel bottom dump track-trucks Model 3KDT
10 Euclid gas dump trucks 8.4 yd struck and 10 yd heap
3—20 yd dump trucks with Cummins diesel engine—1942 models
5 Athey bottom dump track wagons—18 cu yd capacity
16 AC Mack trucks with rock bodies—capacity 5 tons and upwards
6 GMC dump trucks—4½ yds each
3 Sterling dump trucks—5 ton capacity
3 1940 Ford dump trucks with 3 yd bodies—excellent condition
Special additional listing will be supplied upon request

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1 RD-8 tractor with bulldozer and 12 yd scraper
1 D-7 tractor with hydraulic Garwood bulldozer
Several D-6 and D-4 units and quite a selection of Internationals, Allis-Chalmers and Cletrac tractors with bulldozers and scrapers

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Selection of 220 Buckets
Clamshell, Rehandling, Dragline, Orange Peel in sizes of ⅜ — ½ — ¾ — 1 — 1½ — 2 — 3 — 5 yds

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Width	Ply	Top-Bottom	Covers	Width	Ply	Top-Bottom	Covers
48"	8	1/8"	1/16"	20"	5	1/8"	1/32"
42"	5	1/8"	1/16"	20"	4	1/8"	1/32"
36"	6	1/8"	1/16"	18"	4	1/8"	1/32"
30"	6	1/8"	1/16"	16"	4	1/8"	1/32"
30"	5	1/8"	1/16"	14"	4	1/16"	1/32"
24"	5	1/8"	1/32"	12"	4	1/16"	1/32"
24"	4	1/8"	1/32"				

Inquire For Prices - Mention Size and Lengths

TRANSMISSION BELTING

HEAVY-DUTY FRICTION SURFACE

Width	Ply	Width	Ply	Width	Ply
18"	6	10"	6	6"	5
16"	6	10"	5	5"	5
14"	6	8"	6	4"	5
12"	6	8"	5	4"	4
12"	5	6"	6	3"	4

Inquire For Prices - Mention Size and Lengths

ENDLESS "V" BELTS

"A" WIDTH All Sizes | "D" WIDTH All Sizes
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FIRE HOSE

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EACH LENGTH WITH COUPLINGS ATTACHED

Size	Length	Per Length
2½"	50 feet	$28.00
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2"	50 "	23.00
	25 "	13.00
1½"	50 "	20.00
	25 "	11.00

Specify Thread On Couplings

SPECIAL OFFER . . . HEAVY DUTY
RUBBER HOSE

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Each Length with Couplings Attached

I.D. Size	Length	Per Length
¾"	25 feet	$4.25
1"	50 "	8.00
	25 "	6.25
1¼"	50 "	12.00
	25 "	7.50
	35 "	10.50
	40 "	12.00
1½"	50 "	15.00
	25 "	10.00
	35 "	14.00
	50 "	20.00

AIR HOSE

I.D. Size	Length	per Length	Couplings
½"	25 feet	$5.00	$1.50 Pair
	50 "	10.00	1.50 "
¾"	25 "	6.25	2.50 "
	50 "	12.50	2.50 "
1"	25 "	10.00	3.50 "
	50 "	20.00	3.50 "

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CONCRETE MIXING PLANT

1—Complete modern Aggregates Plant, including 3 compartment Bins, 400 tons capacity, with scales; 1,000 bbl. cement bin with scales; complete with all equipment; with or without three 1 yd. capacity, motor driven, Concrete Mixers; 440 volt, A.C.

CRUSHING PLANT

1—Complete Stone Crushing Plant, capacity 850 tons per day. Principle items are: 1—Farrel 24x36 Jaw Crusher; 1—Traylor 3', type TY, Reduction Crusher; 1—4x12 triple deck Screen; 1—long 24" Belt Conveyor and 1—short 18" Belt Conveyor; complete with steel Bins. Plant can be operated with electric motors, all of which electrical equipment is available, or can be operated with two 100 H.P. Diesel motors and one 50 KW Diesel Motor Generator Set. Plant all set up in working position; perfect condition throughout; immediate delivery.

CRUSHER SPECIALS

Allis-Chalmers 7x12.
Reliance 15x24.
Universal 15x36.
Universal 20x36, all steel.

LOG TYPE STONE WASHER

1—Allis-Chalmers 25 ft., heavy duty, Hutch type, Log Washer, with steel tank, ¾" plate, with 2 logs with paddles, 35" dia.

MINE HOIST

1—Vulcan, single drum, 98" dia., 80" face, double reduction herringbone gears, 18" face; enclosed between three sets of bearings, complete with type D Lilly governor and all modern safety features. Will furnish with either 500 H.P. or 750 H.P. motor, 3 phase, 60 cycle, 2,200 volt. Hoist now operating. Built 1940, used less than two years. Offered and guaranteed the same as new. Immediate delivery.

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1—American 41 ton, 4 wheel, saddle tank, standard gauge, cylinders 14x22, ASME boiler, 190 lbs. working pressure.

1—Lima 80 ton, 6 wheel, Switcher with piston valve, with tender, superheater, code boiler, 200 lbs. pressure, electric lights, Walschaert valve motion, automatic lubrication; thoroughly modern, excellent condition, immediate delivery.

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1—Jeffrey-Traylor 6x6' with open pan deck, 6'x6' with 4—No. 5 heavy M-4 motors.

JAW CRUSHERS, GYRATORY CRUSHERS, ROLL CRUSHERS, DRYERS AND KILNS, HOISTS, CARS, CRANES, SHOVELS, ETC.

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1—45 ton American 0-6-0 standard gauge separate tender switcher, 20x26" cylinders, ASME boiler. ICC papers.

1—50 ton Porter 0-4-0 standard gauge saddle tank switcher, National Board and Ohio standard boiler. Built 1928.

1—33 ton Vulcan 0-4-0 standard gauge saddle tank switcher, ASME boiler.

1—72½ ton Baldwin 0-6-0 standard gauge separate tender switcher, 20x26" cylinders. Full time ICC papers.
The above locomotives are now being rebuilt for prompt delivery.

1—40 ft. steel underframe flat car, 50 ton.
1—60 ft. steel underframe flat car, 40 ton.

1—2 yard Hayward rehandling 2 line clamshell bucket, completely overhauled.

Birmingham Rail & Locomotive Co.
BIRMINGHAM 1, ALABAMA

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Besser Super Tamper—Molds to make 4", 6", 8", 12" wide blocks, both 16" and 18" long.
Besser 42 Cubic Ft. Mixer.
7000 Steel Pallets 12"x18".
Stripper Lintel Machine.
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2000 Steel 6 x 16 two-core Pallets.
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FOR SALE

FOR SALE

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Besser Victory K-3 Tamper with Molds to make 4", 6", 10" and 12" wide plain blocks 16" long. 8" Bullnose and 8" and 10" Rock Face Blocks, 16" long.
Besser 25 cubic foot Mixer.
2400—Steel Pallets 12½"x18½".
34—Style 194-A Chase Steel Block Cars.
Priced for quick sale.

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ALL SECTIONS

Also contractors' equipment, "V" shaped and Western cars, 24 and 36-in. gauge, portable track, gas locos, frogs and switches. Attractive prices quoted. Wire, write or telephone for quotations.

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One—four-year-old Super-K 3 Besser Tamper.
One forty-foot Besser Mixer, complete with skip-hoist. All necessary attachments, pallets and racks to be sold with machine.

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FOR SALE

Street Hoist, two drums, 24"x22", 7' flange, 100 H.P., G. E. motor, excellent condition.
36" Stedman Impact Crusher, some replacement parts needed.
Denver-Colorado smooth roll crusher, size of rolls, 18"x36".
All priced for quick sale.

The Cumberland Cement & Supply Co.
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FOR SALE

Bucyrus-Erie 50-B Steam Shovel
Running Condition

WAUKESHA LIME & STONE CO.
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FOR SALE

1—20 x 40 Stargear Universal double roll crusher, almost like new.

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1 AC Generator, built by General Electric, 80 KW capacity, 220 volts, 60 cycles, 900 RPM, Exciter to go with this machine.
1 3½ Cubic Yard Jager Truck Mixer, separate engine drive, mounted on Model 51 White Truck, good rubber.
1 Sullivan low pressure stationary air compressor, Model WG6, horizontal 21" bore, 12" stroke, 50 lbs. pressure, good shape.

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300 CFM Chi. Pneu. with 75 H.P. motor.
526 CFM Ingersoll-Rand, Style "JC"
940 CFM Ingersoll-Rand 10 horiz. 2-st. steam driven with receiver.

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24" x 54" Superior Crushing Rolls.
No. 3 and No. 6 McCully Gyratory.

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350 GPM—130' head American Well Works Centrifugal Pump, 1750 RPM.
300 GPM—50' head American Well Works Centrifugal Pump, 1750 RPM.
600 GPM—150' head Gould Centrifugal Pump—1750 RPM.
(All complete with motors)

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60,000 gallon Water Tank on 89' 9" tower with 10" riser pipe.

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1—No. 4 Gates Gyratory Crusher—7 inch opening.
1—Round Screen—40" diameter—24' long.
ALL IN GOOD CONDITION

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One—48 x 60 Jaw Crusher or an equivalent capacity gyratory crusher.

One—3 or 4-yard diesel or electric crawler shovel.

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Box B-59, c/o Rock Products, 309 W. Jackson Blvd., Chicago, Ill.

By former chief chemist and plant operator with more than 20 years in cement manufacture. Write Box No. B-35. Rock Products, 309 W. Jackson Blvd., Chicago, Illinois.

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WANTED

Plant Superintendent, thoroughly familiar with operating Pulverizing and Grinding Plant.

Harry T. Campbell Sons' Corp.
Towson, Md.

WANTED

Superintendent for moderate sized non-metallic mine and mill in Texas. Must be experienced in underground mining as well as milling and screening. This Company has been in operation for 12 years and this is a permanent job in an essential industry. Write fully giving age, draft status and complete outline of your education and experience, and salary expected.

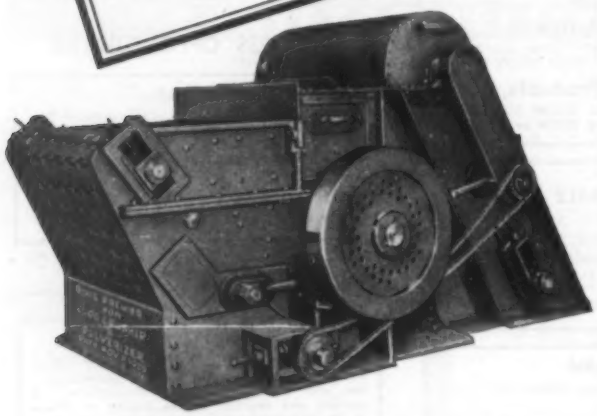
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CEMENT CHEMIST

Wet process cement plant in Southwest has opening for Cement Analyst and Research Chemist. Good educational background necessary. In application give complete information on age, education, work record, marital status, draft classification and salary expected. Box B-56, care Rock Products, 309 W. Jackson Blvd., Chicago, Illinois.

Wanted: Assistant chemist in Midwest cement plant. State training, experience, if any; draft status. Give references you may have. Write Box B-53, Rock Products, 309 W. Jackson Blvd., Chicago, Illinois.

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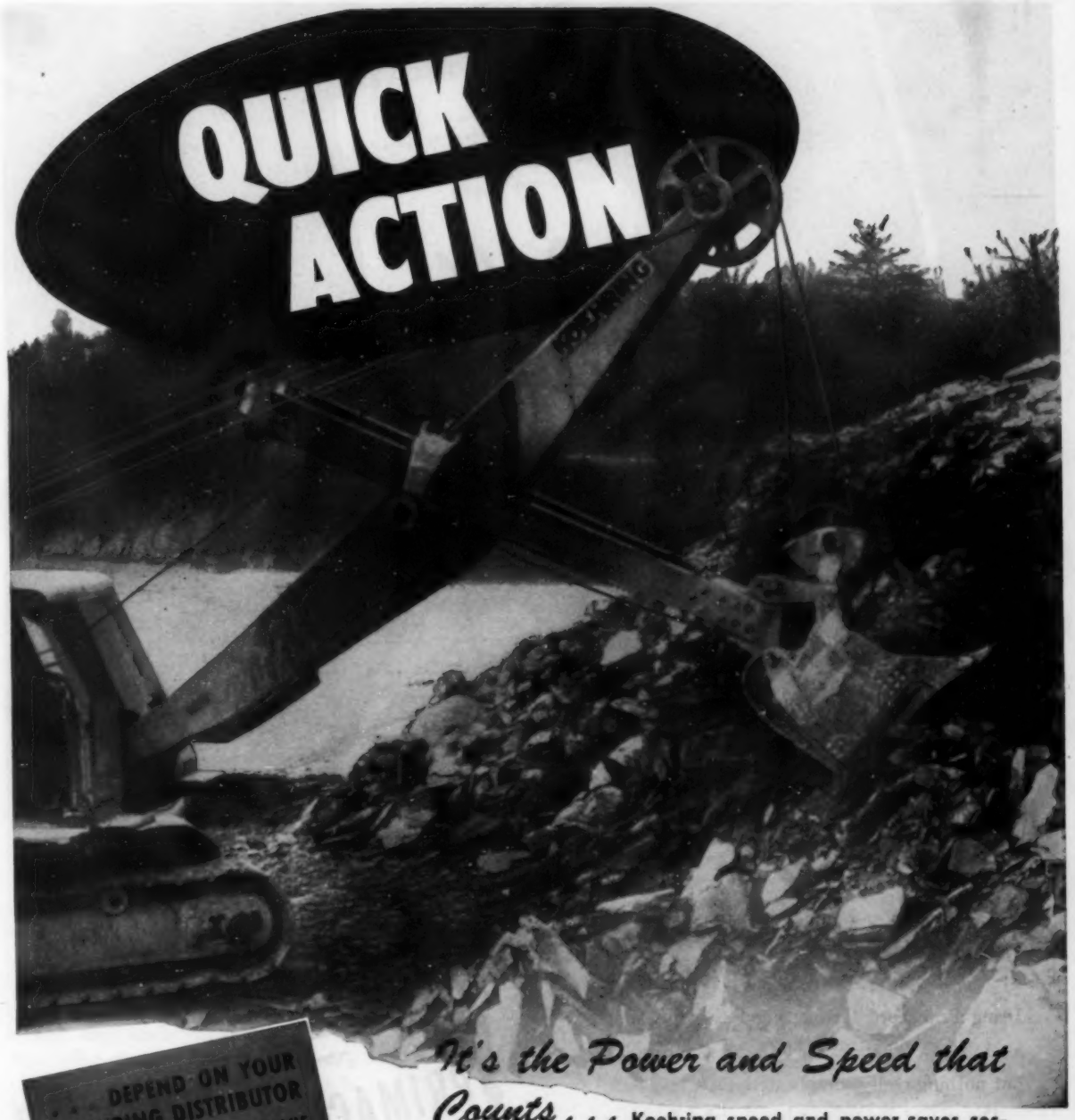
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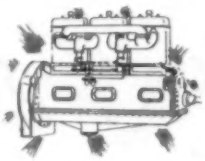
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Keep Your Horses Pulling on the Victory Road

You'll get the most efficient excavator performance when all the "horses" in your engine are pulling full strength. Here are a few hints that may help keep that engine humming.

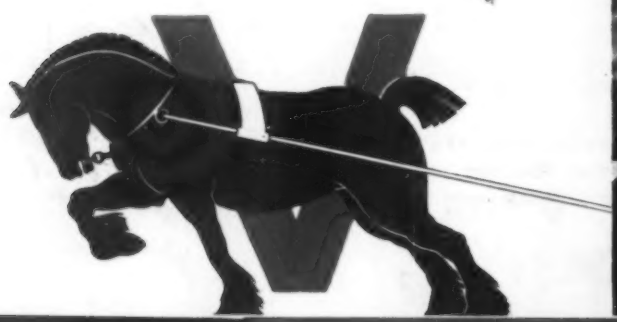


1. Inspect engine regularly and keep it clean.
2. Warm a cold engine up slowly (don't use choke more than is absolutely necessary).
3. Don't stop a heavily loaded engine abruptly. Let it idle a little to cool off before shutting down.



4. Flush radiator out whenever water gets dirty. Be sure water added is clean. Never add cold water to an overheated engine.
5. Use good grade lubricating oil. (Follow manufacturer's recommendations). Clean sump and change filter element frequently (every other oil change is good practice).
6. Keep proper amount of water in battery. (Add water when starting, never when shutting down). Keep terminals covered with grease to avoid corrosion.
7. In gasoline engine, keep spark plugs and distributor points properly adjusted and clean.
8. In diesel engine, check injection nozzle pressures after 300 hours on a new engine, every 1500 hours thereafter KEEP FUEL CLEAN Storage tank and transfer containers or pumps should be kept free of both dirt and water.
9. Get complete care and maintenance instructions from manufacturer or distributor, and follow them carefully.







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Bucyrus-Erie

SOUTH MILWAUKEE, WISCONSIN, U. S. A.